Power Train Tools

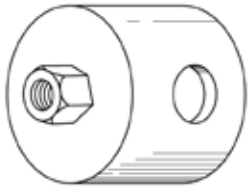
Flywheel Clutch and Direct Drive Transmission 4-1
Torque Converter, Divider and Retarder 4-5
Power Shift and Hydrostatic Transmission 4-14
Steering Clutch and Brake 4-75
Drive Line and Axle 4-82
Marine Gear 4-150
Final Drive 4-159
Wheel and Tire 4-239
Special Tools for Track-Type Tractors 4-253
Service Tools for Wheel-Type Excavators 4-268
Service Tools for 797 Off-Highway Trucks 4-291

Flywheel Clutch and Direct Drive Transmission

FT0529 Retaining Spanner Wrench

SMCS Code: 3050-015, 3050-016, 3100-017
Model: 14E, D25C, D30D, D350D, D4H, 615, 615C
Warranty: None

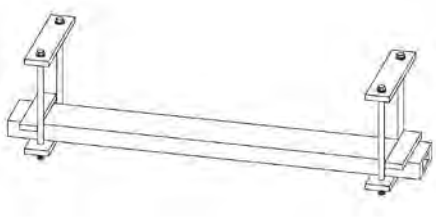
- Used to adjust transmission primary reduction shaft bearing retaining nut on No. 12F and No. 14E Motor Graders



FT0562 Transmission Stabilizer Bar

SMCS Code: 3000-011
Model: 12, 112 and 14 Motor Grader
Warranty: None

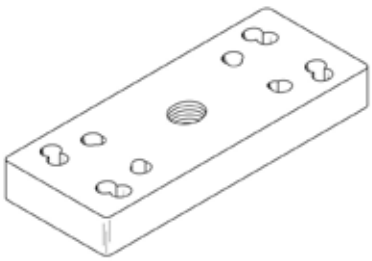
- Used to support transmission when engine is being removed and tandems are being disconnected from main frame



FT0530 Puller Plate

SMCS Code: 3176-010
Model: D6C, D7E, D7F, D8 and older D9 Tractors; 561C, 571A, 571F, 572E and 572F Pipelayers; 983 Track Loaders; 120G, 130G, 140G, 12G and 14G Motor Graders
Warranty: None

- Used to remove transmission input flanges
- Can also be used to remove crankshaft pulleys on 3304 and 3306 Engines used in 120G, 130G, 140G, 12G and 14G Motor Graders
- FT0530 Puller replaced FT0531 Puller and FT0532 Puller
- Material: SAE1018 cr steel



6H-5360 Flywheel Clutch Adjusting Tool

SMCS Code: 3071-025
Model: Early 955 Traxcavators
Warranty: Six Months

- Used for adjusting oil flywheel clutch

Part Number	Description
6H-5360	Flywheel Clutch Adjusting Tool

Transmission Disassemble and Assemble Tools

SMCS Code: 3400-017
Model: Challenger 35, 45, and 55
Warranty: Six Months

- Used to disassemble and assemble transmission

1U-9089 Clutch Spring Compressor

- Used to compress clutch springs (Belleville washers) to remove retaining ring during transmission removal and assembly
- Used with hydraulic press to compress the springs
- Designed to easily access retaining ring when compressor is in place

1U-9090 Bearing and Gear Puller

- Used to remove various press fit bearings and gears from shaft
- Requires two 5/8 - 18 threaded forcing screws (use 8S-9089 Bolt or equivalent)

1U-9091 Guide Stud

- Used to guide rear and center housings during removal and installation (2 required)
- Installs into threaded holes in front housing
- Also helps align gaskets during installation procedure

1U-9092 Wear Sleeve Remover

- Used to remove gear shaft bore sleeves (114-5726 and 114-5727) from center housing
- Used with slide hammer
- Insert remover into bore sleeve and expand it by turning hex portion of remover (pins of expander fit into oil holes of bore sleeve)

1U-9287 Plate Group

- Used to lift gear, shaft, and clutch pack during transmission overhaul
- Removes and installs third and fourth stage speed clutches in front housing (removes both speed clutches at the same time)
- Removes and installs second stage speed clutch (use only 1 hole in plate group)
- Used with 1P-7407 Eyebolt or equivalent and secured in place with a nut
- Designed to fit over shaft — top portion of plate group then rotates into groove in shaft for a positive lock

Reference

SENR8305, Service Manual, Transmission Disassembly and Assembly

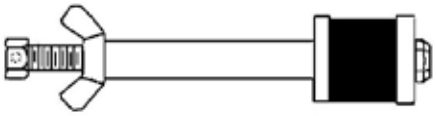
Item	Part Number	Description
1	1U-9089	Clutch Spring Compressor
2	1U-9287	Plate Group
3	1U-9092	Wear Sleeve Remover

Item	Part Number	Description
4	1U-9090	Bearing and Gear Puller
5	1U-9091	Guide Stud (2 required)

376-1570 CX31 Clutch Pack Retaining Plug

SMCS Code: 3050-010
Model Usage: CX31 Transmission
Warranty: 6 Months

- Retains piston to housing during the disassembly and assembly procedure.



Reference

UENR0125 CX31 On-Highway Transmission Disassembly and Assembly

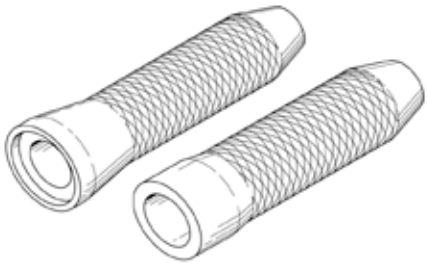
Specifications	
Size	181 mm (7.13 in) x 16 mm (.63 in) diameter
Weight	.7 kg (1.54 lbs)
Material	Steel and Rubber

Part Number	Description
376-1570	CX31 Clutch Pack Retaining Plug

FT1647 Seal Driver

SMCS Code: 3071-012
Model: D4E Direct Drive Tractors
Warranty: None

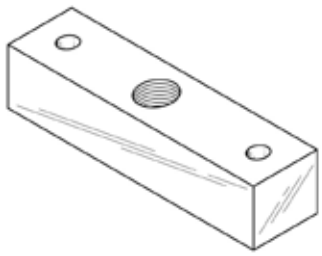
- Used to install seal in manifold of flywheel clutch oil pump
- Fabricated from 5P-8728 Seal Driver as indicated below



FT0543 Pressing Bar

SMCS Code: 3072-011
Model: 966B Wheel Loader
Warranty: None

- Used to press output shaft assembly from range selector (2 bars required)



1U-9069 Limp Home Switch

SMCS Code: 3418
Model: Challenger 35, 45, and 55
Warranty: Six Months

- Used to operate the Challenger in forward and reverse if an electrical failure of the control valve occurs
- To install the switch, remove all solenoid connectors and replace with limp home switch connectors
- All switch connectors are clearly marked for easy connection
- All items in figure are included

Part Number	Description
1U-9069	Limp Home Switch

318-6539 Lip Seal Installer Essential Tool

SMCS Code: 3000-012
Model: TH48-E80 Transmission
Warranty: Six Months

- Used to install output lip seal on TH48-E80 Transmission
- Used with four 0S-1608 Bolts (not included)
- Seal installer and lip seal are placed on journal of flange and longer installer bolts draw seal into transmission
- Prevents misalignment and damage during installation
- Durable plastic construction

Reference

NEHS0891, Tool Operating Manual, Lip-Type Seal Installers for Transmissions and Torque Convertors

Part Number	Description
318-6539	Lip Seal Installer

Torque Converter, Divider and Retarder

FT0501 Seal Driver

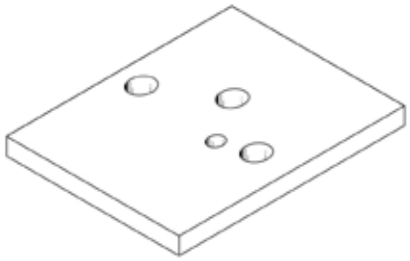
SMCS Code: 3100-012
Model: All Wheel Tractor-Scrapers
Warranty: None

- Used to install carbon-faced seals in hydraulic retarders
- Material: SAE 4140 steel

FT0550 Test Plate

SMCS Code: 3133-036
Model: Most Cat® Models
Warranty: None

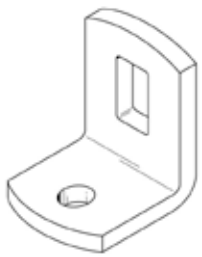
- Used for bench testing torque converter relief valves



FT0901 Bracket

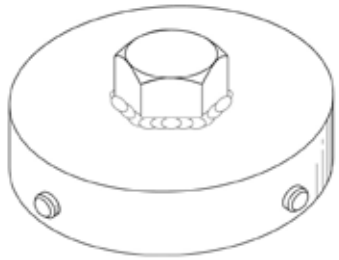
SMCS Code: 1006-010, 1375-010, 3001-029, 3120-010, 3159-017, 3159-029, 3258-017, 4092-010, 4101-017, 4200-010, 4208-017, 4251-017, 5056-010, 5459-010, 6068-010, 7063-010, 7150-010
Model: 773 Truck
Warranty: None

- Mount on torque divider and use FT0556 Hook to remove and install divider
- Material: SAE 1020 steel



FT0553 Adapter
FT0554 Adapter

SMCS Code: 3100-016, 3100-017
Model: D8H, D9G, D7E, 571, 572, 583, 594
Warranty: None

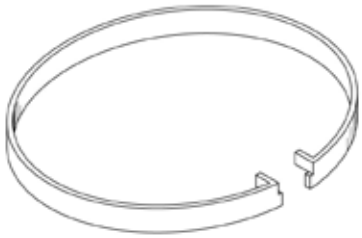


- Required to obtain torque reading on turbine retaining spanner nut on torque converters

Part No.	Model
FT0553	D8H, D9G, 583, 594
FT0554	D7E, 571, 572

FT0943 Ring Compressor

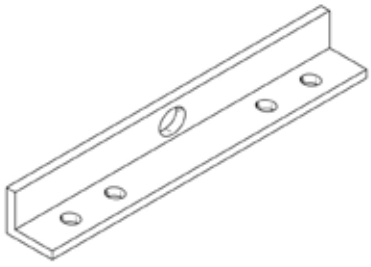
SMCS Code: 3102-012
Model: 657B, 666B Scrapers
Warranty: None



- Used to protect piston ring when installing scraper torque converter clutch
- Material: steel strapping

FT0558 Lift Bracket

SMCS Code: 3252-010
Model: D10N, D11N, 824, 834
Warranty: None

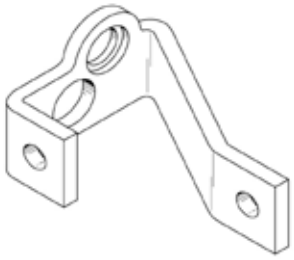


- Used to remove torque dividers
- Material: 50.8 x 50.8 x 9.525 mm (2 x 2 x 3/8 in) angle

FT0555 Adapter

SMCS Code: 3113-011
Model: 769 Truc
Warranty: None

- Used with FT0515 Lifting Beam and FT0516 Lifting Arm to remove torque divider
- Material: SAE 1020 steel



FT1065 Output Gear Spanner Wrench

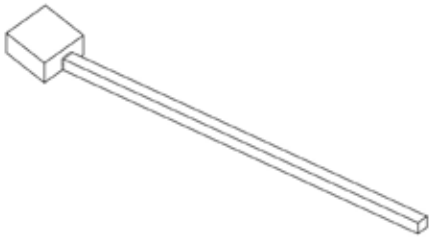
SMCS Code: 3150-017
Model: 528
Warranty: None

- Used to disassemble and assemble torque converter output gear
- Material: SAE 1018 steel

FT0552 Thickness Gauge

SMCS Code: 3112-025
Model: Wheel Tractor-Scrapers, 769 Trucks, No. 16 Motor Graders
Warranty: None

- Used to check adjustment of torque divider shift governor
- Material: mild steel



143-5454 Lifting Bracket

SMCS Code: 1003-010, 3101-010
Model: 776, 777, 777B, 785
Warranty: Six Months

European Union compliant, CE marked

- Replaces 5P-7376 Lifting Bracket
- Used with 143-5455 Lifting Bracket to remove and install 6P-1814 Torque Converter
- For convenience of dealers, 5P-7376 Bracket replaced FT1323 Lifting Bracket; dealers who fabricated bracket in accordance with FT1323 drawing may continue to use it

Safe working load	999 kg (2200 lb)
Grade 8 bolt	used to fasten bracket to 143-5455 Bracket

Part Number	Description
143-5454	Lifting Bracket

208-0810 Seal Installer
Essential Tool

SMCS Code: 3001, 3075, 3101, 3159, 3253
Model: 789 and 793C Off-Highway Truck, Transmission and Torque Converter 990 and 992 Wheel Loader, Transmission Output and Axle Housing 994 Wheel Loader, Torque Converter and Axle Housing 740 Articulated Truck, Output Transfer Gear D11R Track Type Tractor, Torque Converter
Warranty: Six Months

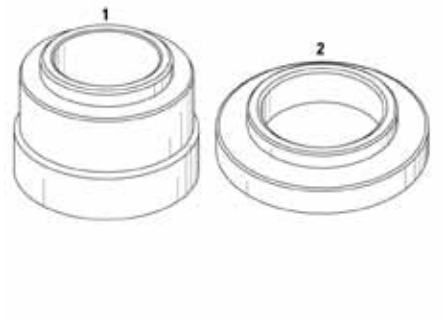
- Used to install the lip seals in various components by using the tool and machine yoke and bolt to draw the lip seal into the cage assembly
- Made of durable plastic to keep yoke surface free of scratches and dents during installation of the lip seal
- Makes seal installation faster and easier by allowing the repair to be done in-chassis

References
Service Magazine Article 3250-0013-2001
NEHS0891, Tool Operating Manual

Part Number	Description
208-0810	Seal Installer

Lip Seal Installers for Off-Highway Truck Torque Converters and Transmissions
Essential Tool

SMCS Code: 3001, 3075, 3101, 3159, 3253-012
Model: 777B, 777C, 777D, 777F, 785B, 785C, 789, 793B Off-Highway Trucks
Warranty: Six Months



- Used to install lip-type seals in torque converters and transmissions
- Can be used for in-chassis or out-of-chassis seal installation
- Prevents misalignment
- Made of durable plastic (helps prevent seal lip damage during installation)
- Plastic material also prevents damage (nicks and dents) to face of yoke assembly
- In-chassis installation is possible on some models using seal installer, a bolt, and yoke assembly

References
Service Manual, Power Train Disassembly and Assembly
NEHS0891, Tool Operating Manual

(Continued)

Lip Seal Installers for Off-Highway Truck Torque Converters and Transmissions (Continued)

Essential Tool

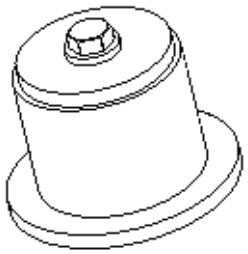
SMCS Code: 3001, 3075, 3101, 3159, 3253-012
Model: 777B, 777C, 777D, 777F, 785B, 785C, 789, 793B Off-Highway Trucks
Warranty: Six Months

Item	Part No.	Description	Use	In
1	285-8041	Lip Seal Installer	install 223-9743 Lip-Type Seal	torque converter of 785B and 785C Off-Highway Trucks
2	285-8042	Lip Seal Installer	with 1D-4588 Bolt to install seals, with 0T-0857 Bolt to install seals	torque converter of 777B, 777C, 777D, and 777F Off-Highway Trucks transmission of 777B, 777C, 777D, 777F, 785B, 785C, 789, and 793B Off-Highway Trucks

366-6065 Torque Converter Output Shaft Seal Installer

SMCS Code: 3253-012
Model Usage: 777G
Warranty: 6 months

- Used for new style seal at the output shaft of the torque converter that requires a cupped seal installer for installation.



Specifications	
Length	139.7 mm dia. x 103 mm long (.5 ft x .34 ft)
Weight	2.28 kg (5.03 lbs)
Material	Steel

Part Number	Description
366-6065	Torque Converter Output Shaft Seal Installer

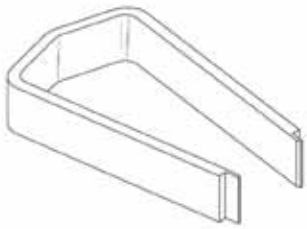
FT3071 Seal Driver Assembly

SMCS Code: 3253
Model: Wheel Tractor-Scraper: 651E (4YR, 89Z); 657E (5YR, 6TR, 9OZ, 91Z); 657G (W1B, W1C) Tractor and 657E (6MB, 7KR, 6PR, 86Z, 87Z); 657G (W1E, W1F) Scraper
Warranty: None

- Used to install 7X-4742 and 300-3155 Lip Seal into cage housings of 6G-3490 and 6G-3500 Drive Shaft Group
- 2-piece seal installer uses a pilot to install seal square with housing
- Built-in stop accurately installs seal to correct depth (prevents possible damage to seal's lip)

FT0617 Spring Guide

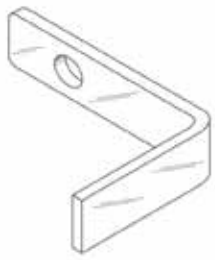
SMCS Code: 3133-012
Model: 951B Traxcavator
Warranty: None



- Required to install torque converter inlet relief valve spring into its housing (spring guide end tabs installed in housing; then spring is slipped down guide into position)
- Material: SAE 1020 steel

FT0551 Holding Plate

SMCS Code: 3113-012
Model: Wheel Tractor-Scrapers, 769 Truck and No. 16 Motor Grader
Warranty: None



- Installed on torque divider when removing retainer from end of output shaft
- Material: SAE 1020 steel

FT0981 Torque Divider Repair Stand

SMCS Code: 3112-012
Model: 773 and 769 Trucks, No. 16 Motor Graders, and non-current Tractor-Scrapers
Warranty: None

- Used to mount torque dividers

143-5455 Lifting Bracket

SMCS Code: 1003-010, 3101-010, 4092-010
Model: 773, 776 and 777 Off-Highway Trucks
Warranty: Six Months

European Union compliant, CE marked

- Used to remove and support torque converter assembly
- Used with 143-5454 Lifting Bracket for removal and installation of torque converter on 776 and 777 series trucks
- Used with FT0901 Bracket for removal and installation of torque divider on 773 series trucks

References

SENR5606, 776C Tractor and 777C Truck Power Train Disassembly and Assembly
SENR3145, 776B Tractor and 777B Truck Power Train Disassembly and Assembly
SENR2971, 776 Tractor and 777 Truck Power Train Disassembly and Assembly

Load limit	1000 kg (2200 lb)
Overall length	1708 mm (67.2 in)
Throat depth	404 mm (15.9 in)
Material	steel

Part Number	Description
143-5455	Lifting Bracket

217-9911 Torque Converter Seal Guide

SMCS Code: 3101-016
Model: 725, 730, 735 Articulated Trucks
Warranty: Six Months

- Used to guide and protect separator plate lip seal while installing separator plate over the drive gear during assembly
- Protects seal from scraping against drive gear (located on the basic converter)

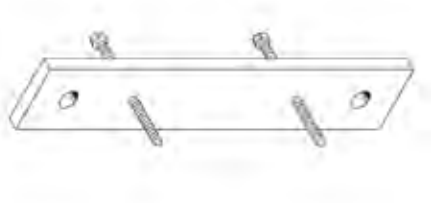
Reference

RENR3448, Disassembly and Assembly of Torque Converter Assembly

Part Number	Description
217-9911	Torque Converter Seal Guide

FT3043 Bearing Retainer Group

SMCS Code: 3101-16
Model: 793D Off-Highway Truck (FDB1-up)
Warranty: None



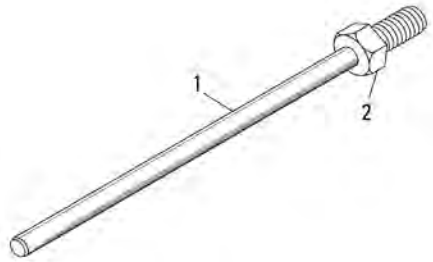
- Used to retain 8T-0231 Bearing when 230-3109 Clutch Housing Assembly is turned upside down during assembly process

Reference

RENR8328, Service Manual, 793D Torque Converter Assembly

FT2625 Rod Assembly and 162-8299 Alignment Plate
Essential Tool

SMCS Code: 3176-012, 1003-012
Model: 769D Off-Highway Truck (OHT)
Warranty: 162-8299 Alignment Plate: Six Months

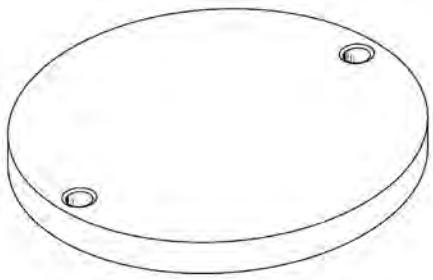


- Used to align drive shaft yokes between torque converter and transfer gear group
- Also used to align engine/torque converter or install transmission/transfer gear group
- Allows use of dial indicator for precise alignment

FT2625 Rod Assembly		
Item	Part Number	Description
1	1P-2721	Rod
2	0S-1629	Bolt

Part No.	Description
0S-1629	Bolt

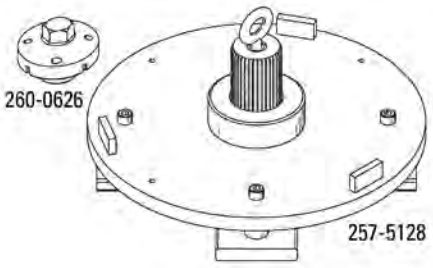
162-8299 Alignment Plate



Part Number	Description	Body Diameter	Thickness
162-8299	Alignment Plate	206 mm (8.11 in)	19 mm (0.75 in)

Torque Convertor Tools for D9T and D10T Track-Type Tractors
Essential Tool

SMCS Code: 4197-017, 3259-012
Model: D9T and D10T Track-Type Tractors
Warranty: Six Months



260-0626 Spanner Socket Assembly

- Used to remove 1T-0229 High Torque Locknut from torque convertor
- Used with 38 mm socket with 1 inch square drive
- Also used with a 194-7586 Pneumatic Wrench Group or 6V-6080 Torque Multiplier and torque wrench
- Safely removes special locknut without damage
- Heat-treated for added strength and durability

257-5218 Holding Fixture

- Used to securely hold torque convertor during disassembly and assembly

References

RENR7471, D9T Torque Convertor Assembly and Disassembly
RENR8166, D10T Torque Convertor Assembly and Disassembly

Overall length	109.7 mm (4.32 in)
Inside diameter	127 mm (5.0 in)
Number of teeth	4
Tooth width	8.00 mm (0.315 in)
Distance between teeth	119.0 mm (4.68 in)
Hex drive	38 mm
Locknut torque	985 N·m (726 ft-lb)

(Continued)

Torque Convertor Tools for D9T and D10T Track-Type Tractors (Continued)

Essential Tool

SMCS Code: 4197-017, 3259-012
Model: D9T and D10T Track-Type Tractors
Warranty: Six Months

Part Number	Description
260-0626	Spanner Socket Assembly

Power Shift and Hydrostatic Transmission

5P-3000 Engine and Transmission Shipping Stand

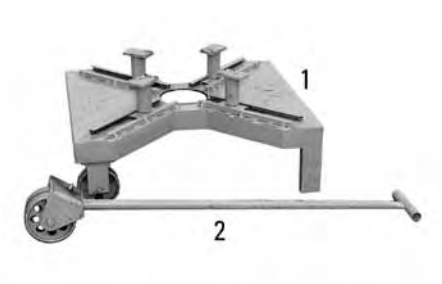
SMCS Code: 3010-010
Model: D10
Warranty: Six Months

- Universal stand that meets need for shipping or storing Cat® 4-, 6-, and 8-cylinder engines and transmission arrangements
- Designed to be picked up from any side with fork lift truck — provides quick transportation
- Greatly facilitates operations where it is necessary to ship engines or transmissions from a branch to another location for rebuild
- So versatile it eliminates need for wood pallets or other stands constructed to fit particular need
- Built with rugged steel angle and box sections, stand has very stable mounting with low center of gravity
- Engine supports adjustable from front to rear and side to side to provide easy adjustment and maximum adaptability
- Hold-down chains tightened with adjustable load binders keep engine or transmission firmly fixed to stand while in transit

Item	Part No.	Description	Qty.
--	5P-3000	Engine and Transmission Shipping Stand	--
1	6D-5356	Knob	12
--	3D-6627	Stud	4

1P-2420 Transmission Repair Stand

SMCS Code: 3010-017
Model: Track-type Tractors, Traxcavator, Wheel Loaders, Wheel Tractors, Motor Graders, 769 and 773 Trucks
Warranty: Six Months



- Accommodates power shift or range transmissions from track-type tractors, Traxcavator, wheel loaders, wheel tractors, motor graders and the 769 and 773 Trucks
- Transmissions mounted in vertical position for disassembly and assembly
- Can also be used as supporting fixture for disassembly of other small transmissions such as those in D5 Tractors, 922, 944, 950 and 966 Wheel Loaders and 955H, 955K and 977H Traxcavator, as well as direct drive transmissions, torque converters, and flywheel clutches
- Such versatility made possible by 4 swivel mounting shoes which can be slid from center into 4 quadrants on top of stand
- Also accommodates differentials and marine gear input shafts when used with FT0957 Adapter Group and FT0996 Positioning Group
- Very maneuverable when used with discontinued 1P-0090 Dolly

Item	Description
2	Dolly (not part of 1P-2420)

Item	Part Number	Description
1	1P-2420	Repair Stand

172-3928 Transmission Support Group, 176-5528 Lift Bracket Assembly
Essential Tool

SMCS Code: 3150-010
Model: 994, 994D, and 994F Wheel Loader
Warranty: Six Months

European Union compliant, CE marked (176-5528)

- Used to remove and install transmission case and planetary
- Makes transmission removal faster and easier

Transmission Support Group

- Used to support and move transmission forward (in chassis)
- Used with lift bracket assembly
- Fastens to output transfer gear box
- Guide bolts provided with Support Group for alignment of transmission during removal and installation
- English fasteners for 994 and 994D Wheel Loader
- Metric fasteners for 994F Wheel Loader

Lift Bracket Assembly

- Used to lift transmission from or into support group
- Used with lift truck having at least 3632 kg (8000 lb) capacity
- Attaches to transmission with hardware provided

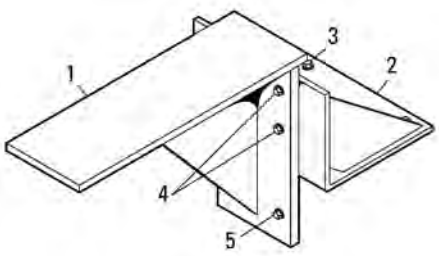
Reference

RENR2034, 994D Wheel Loader Power Train Disassembly and Assembly

Part Number	Description	Max. Capacity	Weight
172-3928	Transmission Support Group	1589 kg (3500 lb)	32 kg (70 lb)
176-5528	Lift Bracket Assembly	1589 kg (3500 lb)	34 kg (75 lb)

172-3928 Transmission Support Group

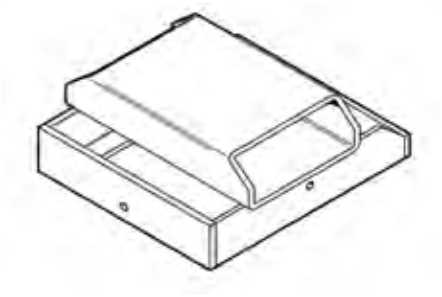
Item	Description
1	Support Assembly
2	Bracket Assembly



Item	Part No.	Description	Requires
172-3928 Transmission Support Group			
3	5P-1075	Hard Washer	4
3	0S-1590	Bolt (English)	4
3	8T-4121	Washer	4
3	8T-4185	Bolt (Metric)	4
4	0S-1571	Bolt (English)	4
4	9S-8752	Nut - Full	4
5	5P-8245	Hard Washer (fork mounting hardware)	2
5	7B-3235	Bolt (English)	2
5	8T-4223	Hard Washer [1]	2
5	8T-4956	Bolt (Metric)	2
Not Shown			
--	8K-1493	Bolt (English)	4
--	098-6000	Bolt (Metric)	4

[1] 2 required

176-5528 Lift Bracket Assembly



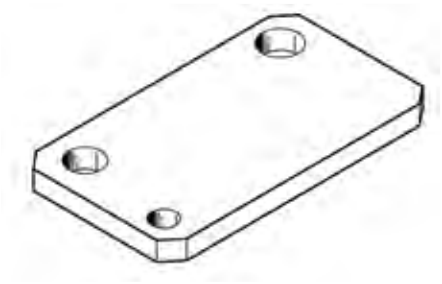
Model: 994, 994D, and 994F Wheel Loader
SMCS Code: 3150-010

Part No.	Description	Requires	Use
176-5528 Lift Bracket Assembly			
8T-0357	Bolt[1]	4	Use as required per application
9X-8882	Bolt[1]	4	Use as required per application
5P-8247	Hard Washer	4	--

[1] Not shown

1P-2414 Plate

SMCS Code: 3010-010
Model: 545 Wheel Skidder
Warranty: Six Months



- Used to adapt hole pattern on repair stand when installing transmission or axle housing
- Used with 1P-2416 Swivel Assembly (1P-2420 Repair Stand, Transmission) when installing transmissions
- Can be mounted to axle housing during assembly and disassembly
- Provides safe alternative for removal and installation

Part Number	Description
1P-2414	Plate

9U-5963 Spindle Hub Adapter, 9U-5964 Drive Adapter 9U-5965 Torque Converter Support

SMCS Code: 3101-036
Model: 789 and 793 Trucks
Warranty: Six Months

- Used to support torque converters on hydraulic test benches (makes testing faster and easier)
- Securely and rigidly holds converter on test bench during testing
- Spindle holds converter on center (helps eliminate damage to seals and bearings)
- Spindle and drive adapters allow converter to be rotated with less vibration

Reference
NEHT6043, Test Procedure, 789 and 793 Torque Converter Test Procedure

Part Number	Description
9U-5963	Spindle Hub Adapter
9U-5964	Drive Adapter
9U-5965	Torque Converter Support

FT1335 Disassembly and Assembly Transmission Fixture

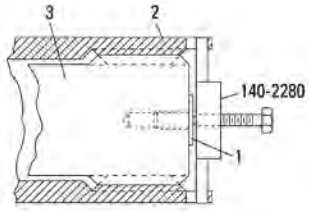
SMCS Code: 3000-017, 3150-017
Model: 621E, 623E, 627E, 631D, 631E, 633D, 637D, 651E, 657E
Warranty: None

- Used with 1P-2420 Transmission Repair Stand to aid in disassembly and assembly of 7- and 8-speed transmissions
- Includes shims which locate center shaft in relation to No. 3 clutch housing; this prevents damage to shaft during disassembly and insures proper shaft location during assembly

140-2280 Stop Arm Assembly

SMCS Code: 3000-016, 3000-017
Model: 24H Motor Graders
Warranty: Six Months

- Used to hold 123-0420 Input Shaft (4) in an assembled position while turning transmission over during assembly
- Prevents input shaft from dropping out of position and causing damage to internal seals
- Tool slides into holes drilled through 6Y-9021 Shaft Assembly (3) and bolt is tightened against a customer-supplied plug (this will lock input shaft in place)
- Plug (1) is used to protect internal threads of input shaft



Reference

SENR9011, Service Manual

Bolt	9F-7022
Bolt length	38 mm (1.5 in)
Bolt size	1/4 - 20

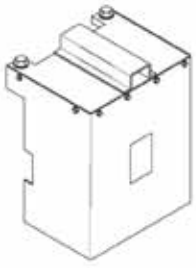
Part Number	Description
140-2280	Stop Arm Assembly

284-0837 Restraint Group

Essential Tool

SMCS Code: 3030, 3063
Model: TH31 and TH35 Transmissions (OEM)
Warranty: Six Months

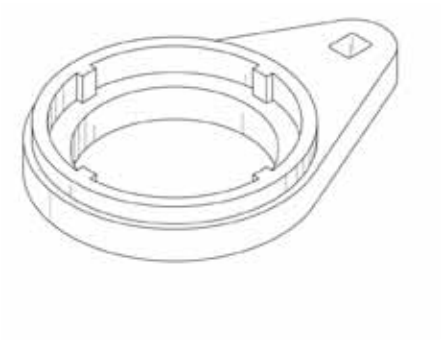
- Used to securely lock output shaft when using transmissions autocalibrate feature
- 288-7353 Shear Bolt available for service replacement as needed



Part Number	Description
284-0837	Restraint Group

276-6863 Spanner Wrench Assembly
Essential Tool

SMCS Code: 3101-016
Model: TH48FT-E80, FRT1-Up Transmission; TH48FT-E70, KSH1-Up Transmission
Warranty: Six Months



- Used to remove and install torque convertor ring nut
- Used with 1/2 inch square drive torque wrench or breaker bar
- Heat-treated to provide long service life

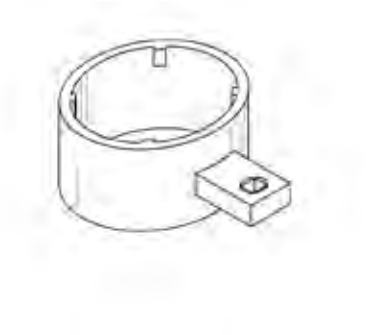
References

RENR9664, Disassembly and Assembly Manual, TH48FT - E80 Transmission, Torque Converter Disassembly and Assembly
KENR6061, Disassembly and Assembly Manual, TH48FT - E70 Transmission, Torque Converter Disassembly and Assembly

Part Number	Description
276-6863	Spanner Wrench Assembly

FT3141 Spanner Wrench
Essential Tool

SMCS Code: 3001
Model: TH55-E70 Transmission
Warranty: None



- Used to remove and install 138-3817 Bearing Nut
- Used with 1/2 inch drive breaker bar or torque wrench
- Welded steel construction
- Uses four hardened steel (SAE 4140) tangs to engage special bearing nut
- Driver (bar) provides attachment point for breaker bar or torque wrench when removing or installing bearing nut
- Made from 133.35 mm (5.25 in) O.D. ASTM A370 steel pipe with 6.35 mm (.250 in) wall thickness

Clearance diameter	133.35 mm (5.25 in)
Number of tangs	4
Width of tangs	8.7 mm (.35 in)
Distance between tangs	113 mm (4.45 in)
Center to center distance from drive to socket	111.1 mm (4.375 in)

FT1392 Mounting Adapter

SMCS Code: 3010-017
Model: Models with 7 and 8 Speed Transmissions
Warranty: None

- Used to mount 7- and 8-speed transmissions in horizontal position on 1P-2420 Transmission Repair Stand (2 required)
- Horizontal mounting provides advantage to serviceman for disassembly and assembly of transfer gears and hydraulic controls

FT1279 Transmission Stand

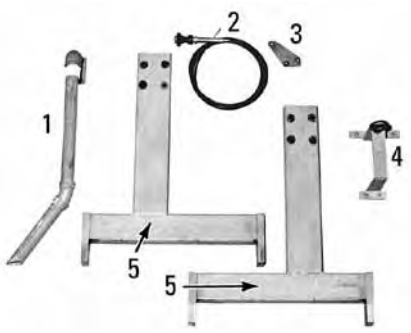
SMCS Code: 3150-017, 3258-010
Model: 12G, 120G, 130G, 140G
Warranty: None

- Multi-use stand for transmissions of all "G" Series Motor Graders
- Has 2 separate transmission mounting brackets and an adjustable center support; one of mounting brackets used for 14G and 16G Motor Grader transmissions; other mounting bracket used for 12G, 120G, 130G and 140G Motor Grader transmissions
- Can be used for differential housing removal and installation, disassembly and assembly, testing on hydraulic test bench, and for transmission storage and shipping
- Fork slots in base of stand make it possible to quickly and easily move transmission with lift truck

Hydrostatic Transmission Tools

SMCS Code: 3224-025
Model: 963 and 973 Track-Type Loaders
Warranty: Six Months

- Used to lift, support, and test hydrostatic transmissions
- Using the proper hardware simplifies installation onto the test bed
- Reduces time spent securing transmission to test center
- Lifting bracket allows transmission to be lifted in a level position, making installation of support brackets much easier
- Transmission supports will rigidly secure transmission to test bed or store it after testing
- Control cable allows test operator to control transmission from a distance
- Overflow assembly directs oil into test bed, preventing it from splashing onto the floor
- All parts, with exception of overflow tube, can also be used to test hydrostatic transmissions on 945 and 953 Track-Type Loader



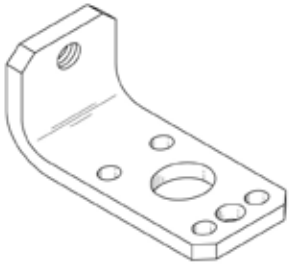
References
NEHT6037, Test Procedure (973)
NEHT6040, Test Procedure (963)

Item	Description
1	Overflow Assembly (Not serviced)
3	Shift Cable Bracket

Item	Part No.	Description
2	4C-6182	Control Cable
4	9U-5162	Lifting Bracket
5	9U-5214	Transmission Support

FT1411 Bracket

SMCS Code: 3101-017, 3280-017, 4267-017
Model: 773B, 776, 777, 777B, 825C, 826C, and Earlier 922, 944 and 966 Wheel Loaders
Warranty: None



- Replaces 7M-7474 Bracket
- Two of these fabricated brackets are used with 3/4 inch-10 NC bolts to support engine when transmission is removed; brackets must be removed prior to operating machine to prevent damage to housing
- Material: SAE 1020 steel

4C-6760 Support Assembly, FT2359 Torque Converter Support FT2362 Engine Support

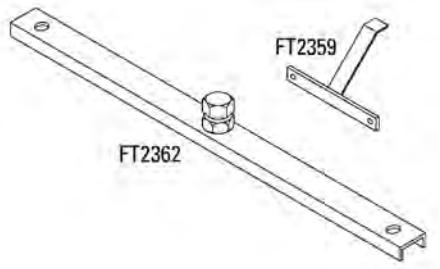
SMCS Code: 3000-010
Model: 416, 426, 428, 436, 438 and 446 Backhoe Loaders
Warranty: None

- 4C-6760 Support Assembly used in removing and installing transmissions on all backhoe loaders
- FT2359 Torque Converter Support used on 446 Backhoe Loader to support torque converter as transmission is being removed or installed
- FT2362 Engine Support used to support rear of engine when removing or installing transmission on 446 Backhoe Loader
- Tools allow fast, easy, safe, 1-man operation
- Front dash, floor plates, seat and, in some cases, brake pedals have to be removed; support is centered over transmission with movable leg secured to 1 of the seat mounting locations; a chain fall, or 9S-9100 Sling Assembly, is used to raise and lower transmission

4C-6760 Support Assembly

Part Number	Description
4C-6760	Support Assembly

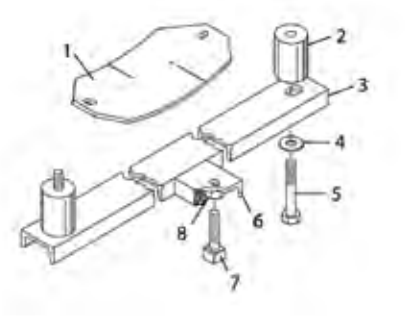
FT2359 Torque Converter Support FT2362 Engine Support



FT2535 Engine Support Bar Assembly

SMCS Code: 3001-010
Model: 416C, 426C, 428C, 436C, and 438C Backhoe Loaders
Warranty: None

- Used to support rear of engine during transmission removal/installation
- Mounts to existing holes in frame rails
- Cover plate (1) mounts to existing holes in engine flywheel housing
- Provides unobstructed access to remove and install transmission
- Adjustable set screw allows weight of transmission to be transferred from transmission mounting brackets (makes removal much easier)
- Provides a safer method of supporting rear of engine during transmission removal/installation
- Material for fabricated parts: SAE 1020 steel



Item	Description
1	Cover plate
2	Spacer[1]
3	Channel
6	Channel
[1]2 required	

Item	Part Number	Description
4	8T-4223	Hard Washer[1]
5	8T-4176	Hex Head Bolt[1]
7	4B-3584	Square Head Setscrew
8	6V-8188	Nut - Full

[1] 2 required

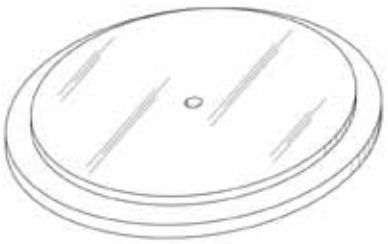
FT2363 Seal Installer

SMCS Code: 3158-012
Model: 994 Wheel Loader
Warranty: None

- Used to install 6V-6899 Seal in transfer gear housing without damaging seal or housing
- Consists of step plate to drive the 16.51 cm (6.5 in) ID by 19.05 cm (7.5 in) OD seal

Reference

SENR4740, 994 Wheel Loader Service Manual



FT0947 Spring Compressor
FT0833 Clamp

SMCS Code: FT0947 Spring Compressor: 3150-015, 3150-016, 3150-017, 4251-010, 4250-015, 4250-016, 4267-017; FT0833 Clamp: 3000-017, 3000-017FR, 3052-017, 3150-015, 3150-016, 3150-017, 3150-017FR, 3150-017RE
Model: FT0947 Spring Compressor: 657B, 666B; FT0833 Clamp: D4D Tractor, 920 and 930 Wheel Loaders, 613 Tractor-Scrapers
Warranty: None

- FT0947 Spring Compressor used to clamp No. 3 clutch piston when assembling 657B and 666B range transmissions (2 required)
- Used to hold piston when clutches are inverted when assembling power shift transmissions on D4D Tractors, 920 and 930 Wheel Loaders, and 613 Tractor-Scrapers (2 required)

1U-5481 Pressure Gauge Group
1U-5482 Pressure Adapter Group

SMCS Code: 1000-025, 1000-082, 1300-038, 3000-035, 3000-038, 3000-081, 3000-038, 3000-038, 3150-035, 3150-038, 4250-038, 5050-038, 7450-081
Model: All Cat® Power Shift Transmissions and Other Hydraulic Systems
Warranty: Six Months

- Used to test all Cat power shift transmissions and other hydraulic systems
- Both 1U-5481 and 1U-5482 required to replace discontinued 6V-4160 Transmission Hydraulic Test Group
- Improvements to 1U-5482 include increased number of fittings for usage on all applicable equipment and smaller diameter diagnostic hoses for easier handling

Reference

REG00452, Power Shift Transmission Testing and Adjusting manual

Item	Description
1	Form NEEG2220 Decal
	Form NEEG2224 Decal
2	Form NEEG2222 Decal (Adapter Case Inside Lid)
	Form NEEG2221 Decal
Part No.	Description
038747	Pipe Elbow

Part No.	Description	Size	Qty.
Item (1)			
1U-5481	Pressure Gauge Group	--	--
3J-1907	O-ring	--	8
6V-3965	Adapter - STR Quick Disconnect	--	8
8T-0841	Case	--	--
8T-0846	Pressure Gauge	0 - 1000 kPa (0 - 145 PSI)	--
8T-0848	Pressure Gauge	0 - 400 kPa (0 - 58 PSI)	--

Part No.	Description	Size	Qty.
Item (1) (Continued)			
8T-0849	Pressure Gauge	0 - 2000 kPa (0 - 290 PSI)	--
8T-0850	Pressure Gauge	0 - 3400 kPa (0 - 580 PSI)	3
8T-0851	Pressure Gauge	0 - 15850 kPa (0 - 2300 PSI)	--
8T-0852	Pressure Gauge	0 - 39 960 kPa (0 - 5800 PSI)	--

(Continued)

1U-5481 Pressure Gauge Group (Continued)

1U-5482 Pressure Adapter Group

SMCS Code: 1000-025, 1000-082, 1300-038, 3000-035, 3000-038, 3000-081, 3000-038, 3000-038, 3150-035, 3150-038, 4250-038, 5050-038, 7450-081
Model: All Cat® Power Shift Transmissions and Other Hydraulic Systems
Warranty: Six Months

Part No.	Description	Size	Qty.
Item (2)			
177-7861	Hose Assembly	--	8
1J-9671	O-ring	--	2
1U-5482	Pressure Adapter Group	--	--
3B-6552	Elbow Pipe	90° 1/8 in NPT Ext and Int Thd	2
3D-8884	Elbow	90° 1/4 in NPT Ext and Int Thd	2
3J-1907	O-ring	--	8
3J-7354	O-ring	--	4
3K-0360	O-ring	--	2
4C-3723	Box (Yellow Plastic for Fittings)	--	--
5P-2937	Adapter	7/16 in SAE Ext Thd x 1/4 in NPT Int Thd	4
5P-3501	Adapter	9/16 in SAE Ext Thd x 1/4 in NPT Int Thd	6
5P-4674	Adapter	3/4 in SAE Ext Thd x 1/2 in NPT Int Thd	2
5P-4675	Adapter	1/2 in SAE Ext Thd x 1/4 in NPT Int Thd	2
6V-0404	Bonded Seal	--	2
6V-0405	Bonded Seal	--	2
6V-0406	Bonded Seal	--	2
6V-0407	Bonded Seal	--	2
6V-3965	Adapter - STR Quick Disconnect	--	8
6V-3966	Valved Nipple	1/4 in NPT Ext Thd	8

Part No.	Description	Size	Qty.
Item (2) (Continued)			
6V-3989	Unvalved Nipple	1/4 in NPT Int Thd	2
6V-4142	Unvalved Nipple	1/8 in Int Thd	--
6V-4143	Coupler As	--	16
6V-6560	O-ring	--	2
6V-8926	Adapter	M10 x 1.5 Ext Thd x 9/16 in SAE Int Thd	2
6V-9028	O-ring	--	2
7M-8489	Adapter Assembly	90° 9/16 in SAE Ext Thd x 1/4 in NPT Int Thd	2
8C-7574	Adapter	1/4 in NPT x 6 in Ext Nipple	1
8C-7575	Adapter	1/8 in NPT x 1 1/2 Ext Nipple	3
8C-7576	Adapter	1/8 in NPT x 3 in Ext Nipple	3
8T-0841	Case	--	--
8T-7860	Connector	M12 x 1.5 Ext Thd x 7/16 in SAE Int Thd	2
8T-7861	Connector	M14 x 1.5 Ext Thd x 9/16 in SAE Int Thd	2
8T-7876	O-ring	--	2
8T-7908	Adapter	1/8 in - 28 BSPP Ext Thd x 7/16 in SAE Int Thd	2
8T-7909	Adapter	1/4 in - 19 BSPP Ext Thd x 7/16 in SAE Int Thd	2
8T-7911	Adapter	3/8 in - 19 BSPP Ext Thd x 9/16 in SAE Int Thd	2
8T-7913	Adapter	1/2 in - 14 BSPP Ext Thd x 3/4 in SAE Int Thd	2

4C-5560 Hose Assembly
4C-5561 Bulkhead Fitting Group

SMCS Code: 0784
Model: 1U-5481 Pressure Gauge Group
Warranty: Six Months

- Repair parts for 1U-5481 Pressure Gauge Group; when replacing any of the pressure gauges, 20.32 cm (8 in) length of diagnostic hose is often damaged
- 4C-5560 Hose Assembly has 1/8 inch NPT pipe fittings on both ends — fits current gauge groups
- First generation of gauge groups has 1/4 inch NPT bulkhead fitting; 4C-5561 Bulkhead Fitting used to adapt these to 0.125 mm (1/8 in) hose

Part Number	Description
4C-5560	Hose Assembly
4C-5561	Bulkhead Fitting Group

Filter Elements

SMCS Code: 5068-010
Model: All Cat® Hydraulic Filter Units and Carts
Warranty: Six Months

- Used to remove water from a hydraulic oil tank
- Economical alternative for water removal
- Fits on standard, low-pressure, spin-on, filter head
- Aluminum body with cellulose media
- Working pressure: 1035 kPa (150 PSI)
- Particle filtration size: 25-micron

Item	Part No.	Length	Diameter	Weight	Flow Rate	Water Removal
1	180-9549	132.3 mm (5.21 in)	93.7 mm (3.69 in)	0.54 kg (1.2 lb)	95 lpm (25 gpm)	170 mL (10.3 cu in) @ 20 PSI differential
2	188-7027	289.3 mm (11.39 in)	129.5 mm (5.10 in)	1.44 kg (3.2 lb)	227 lpm (60 gpm)	700 mL (42.4 cu in) @ 20 PSI differential

1-, 2-, and 4- Filter Heads

SMCS Code: 5068
Model: Cat® Hydraulic System or Vehicle
Warranty: Six Months

- Used to filter oil in 300 lpm (80 gpm) to 450 lpm (120 gpm) applications
- Attaches to a variety of filtering tools using either pipe threads or 4-bolt flanges
- Can be permanently attached to system/vehicle or fitted with currently available, quick-disconnect fittings
- Made of lightweight, cast aluminum for strength and durability
- Some filter heads have visual dirty element indicator to show when to change element
- Typical uses:
  188-3242 HD Air Filter Cart
  127-8781 Filter Cart, 110 Volt / 60 Hz
  169-7159 Filter Cart, 220 Volt / 50 Hz
  174-9158 Compressed Air Filter Cart

(Continued)

1-, 2-, and 4- Filter Heads (Continued)

SMCS Code: 5068
Model: Cat® Hydraulic System or Vehicle
Warranty: Six Months

Part No.[1]	Bypass Pressure	Working Pressure	Maximum Flow	Ports	Indicator
Single Filter Heads					
9U-6989	170 kPa (25 PSI)	1,034 kPa (150 psi)	300 lpm (80 gpm)	1 1/2 in NPT	no
229-7259	None	552 kPa (80 psi)	300 lpm (80 gpm)	1 1/2 in NPT	no
275-8688	None	1,034 kPa (150 psi)	265 lpm (70 gpm)	1 1/4 in NPT	yes
Two Filter Heads					
9U-6991	170 kPa (25 PSI)	1,034 kPa (150 psi)	450 lpm (120 gpm)	1 7/8 in SAE and 1 1/2 in NPT	no
229-7260	None	552 kPa (80 psi)	450 lpm (120 gpm)	1 1/2 in NPT and 2 in, 4-bolt flange	yes
140-7971	170 kPa (25 PSI)	1,034 kPa (150 psi)	450 lpm (120 gpm)	1 1/2 in NPT and 2 in, 4-bolt flange	yes
Four Filter Heads					
9U-5970	170 kPa (25 PSI)	1,034 kPa (150 psi)	450 lpm (120 gpm)	1 1/2 in NPT	yes
229-7261	None	552 kPa (80 psi)	450 lpm (120 gpm)	1 1/2 in NPT	yes

[1] 9U-5970 comes as a complete assembly with four 9U-5870 Elements, 25 micron.

Filter Head Elements

Filter Elements for 1-, 2-, and 4-Filter Heads (single head shown) (Elements fit heads of 5.1 in diameter and 1 1/2 in-12 thd)				
Nominal Micron Rating	**Media Material**	**Dirt Holding Capacity**	**Height**	**Part Number**
2	Synthetic	--	289.3 mm (11.39 in)	198-3188
5	Synthetic	64 g (2.26 oz)	289.3 mm (11.39 in)	9U-6983
10	Synthetic	64 g (2.26 oz)	270.8 mm (10.66 in)	9U-5870
18	Synthetic	90 g (3.17 oz)	270.8 mm (10.66 in)	9U-6984
18	Synthetic / Cellulose	Water -0.57 g (20 oz)	270.8 mm (10.66 in)	188-7027
149	Cellulose / Wire Mesh	--	289.3 mm (11.39 in)	9U-6985

9U-6707 Spin-on Thread Adapter

Warranty: Six Months

Part Number	Description
9U-6707	Spin-on Thread Adapter

- Can be used with 129.54 mm (5.10 in) diameter elements
- 1 1/4 inch NPT male to 1 1/2 - 16 thd

Spin-on Heads

Warranty: Six Months

- Heads and elements sold separately
- Heads accept spin-on elements of 93.98 mm (3.7 in) diameter, 1 inch-12 thd
- Typical uses:
  4C-9475 Transfer Cart, 115 VAC, 60 Hz
  169-7159 Transfer Cart, 220 VAC, 50 Hz

Heads						
Nominal	**Working Pressure**	**Ports**	**No. of Elements**	**DEB Psid**	**DEI**	**Part No.**
25 gpm (95 lpm)	1,034 kPa (150 psi)	3/4 in - 16 SAE	1	25	No	4C-3408
25 gpm (95 lpm)	1,034 kPa (150 psi)	3/4 in NPT	1	25	No	9U-6987
25 gpm (95 lpm)	1,034 kPa (150 psi)	1 1/16 in SAE	1	25	No	9U-6988

Elements for Spin-on Heads

Elements for Heads of 3.7 in diameter and 1 in -12 thd				
Nominal Micron Rating	**Media Material**	**Dirt Holding Capacity**	**Height**	**Part No.**
5.0	Synthetic	15 g (0.53 oz)	140 mm (5.5 in)	9U-6978
8.5	Synthetic	15 g (0.53 oz)	140 mm (5.5 in)	9U-6980
18.0	Synthetic	23 g (0.81 oz)	140 mm (5.5 in)	9U-6981
25.0	Synthetic / Cellulose	Water - 170 g (6 oz)	140 mm (5.5 in)	180-9549
149.0	Wire Mesh	--	140 mm (5.5 in)	9U-6982

205-7379 Filter Assembly
229-1463 Filter Assembly

SMCS Code: 5068
Warranty: Six Months

- Used to filter oil in applications requiring low pressure, high volume
- Small and lightweight
- Comes standard with a 205-7380 Synthetic Filter Element, 3 micron
- 205-7381 Filter Elements, 5-micron, also available
- Head section is made from die cast aluminum with a steel body
- Internal 2 bar (30 PSI) bypass has an orange pop up indicator (requires manual reset) on 205-7379; 229-1463 has differential pressure switch, 240 volt AC, 1-phase, for panel readout or light
- For use on hydraulic test benches or other systems needing kidney looping

Overall height	810.0 mm (31.9 in)
Width and depth of head	159.0 mm (6.26 in)
Canister diameter	119.0 mm (4.7 in)
Ports (in/out)	1 1/2 in NPT
Bypass (cracking) pressure	2 bar (30 PSI)
Flow rate (maximum)	379 lpm (100 gpm)

Cartridge Elements for 205-7379 and 229-1463 Filter Groups				
Nominal Micron Rating	**Media Material**	**Dirt Holding Capacity**	**Height and Diameter**	**Part No.**
3	Synthetic	345 grams	685.8 mm (27.0 in), 101.6 mm (4.0 in)	205-7380
5	Synthetic	258 grams	685.8 mm (27.0 in), 101.6 mm (4.0 in)	205-7381
N/A	Polymer	443 ml (15 oz)	685.8 mm (27.0 in), 101.6 mm (4.0 in)	283-5665

198-3188 Two Micron Filter Element

SMCS Code: 5068
Model: All Cat® bulk hydraulic fluid storage tanks
Warranty: Six Months

- Used to remove contamination from fluids held in bulk storage tanks
- Use in high-volume applications
- Two micron filtration capability
- Large dirt holding capacity
- Water absorption style filter media
- Can be used with the following filter carts:
  188-3242 HD Air Filter Cart
  127-8781 110 Volt / 60 Hz Filter Cart
  169-7159 220 Volt / 50 Hz Filter Cart
  174-9158 Compressed Air Filter Cart

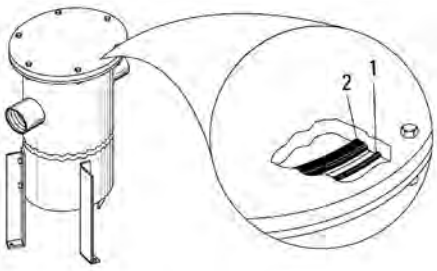
Overall size	289 x 129 mm (11.4 x 5.1 in)
Filter media	synthetic
Weight	1.44 kg (3.2 lb)
Body style	spin-on
Pressure rating	1034 kPa (150 PSI)

Part Number	Description
198-3188	Element, 2-micron

212-7768 Filter Group

SMCS Code: 5068-070
Model: All Cat® hydraulic fluids
Warranty: Six Months

- Used for high-volume filtering of petroleum fluids
- Can be used on a mobile truck or trailer and/or in the shop
- Equipped with a standard 25-micron filter element (optional elements are also available)
- NPT ports for easy hose connections
- Designed to use optional 218-8445 Delta Pressure Gauge
- Multiple outlets allow versatility in hookup configuration



Inlet port (located in bottom of housing)	2 1/2 NPT
Outlet ports (located on opposite sides)	2 1/2 NPT
Drain and/or pressure gauge ports (two, located in bottom of housing)	3/8 NPT
Maximum operating pressure	689 kPa (100 PSI)
Internal bypass	None
Material	Steel
Dry weight	43 kg (95 lb)
Overall size	78.7 cm (31.0 in) high by
	39.4 cm (15.5 in) wide with a
	33.0 cm (13.0 in) cover diameter
Flow rate	Up to 2271 lpm (600 gpm)
Item	Description
1	O-ring Replacement Seal[1]
2	O-ring Replacement Seal[2]
[1]Part number 6Y-8134	
[2]Part number 8J-8879	

(Continued)

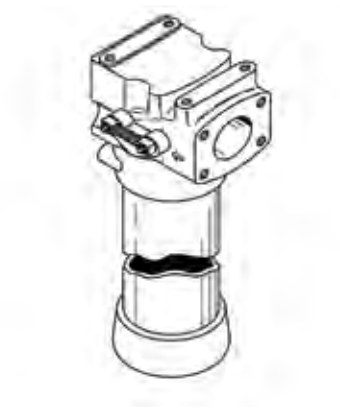
212-7768 Filter Group (Continued)

SMCS Code: 5068-070
Model: All Cat® hydraulic fluids
Warranty: Six Months

Elements for 212-7768 Filter Group					
Nominal Micron Rating	**Media Material**	**Dirt Holding Capacity**	**Height and Diameter**	**Part No.**	**Description**
2.0	Synthetic	660 g (1.46 lb)	559 mm (22 in), 109 mm (7.5 in)	212-7125	--
5.0	Synthetic	311 g (0.69 lb)	559 mm (22 in), 109 mm (7.5 in)	188-7020	--
8.0	Synthetic	430 g (0.95 lb)	559 mm (22 in), 109 mm (7.5 in)	192-1560	--
23.0	Cellulose	450 g (0.99 lb)	559 mm (22 in), 109 mm (7.5 in)	185-1375	--
--	--	--	--	8J-8879	O-ring Replacement Seal
--	--	--	--	212-7768	Filter Group
--	--	--	--	6Y-8134	O-ring Replacement Seal

185-1153 High Pressure Filter Group

SMCS Code: 5068-070
Model: All Cat® bulk hydraulic fluid storage tanks
Warranty: Six Months



- Used to filter oil in high-volume applications
- Provides extended time between element changes
- Uses synthetic fiber filter elements
- Machined-tube body is made of ductile iron for strength and durability
- Visual dirty element indicator shows when to change element
- Filter has increased dirt holding capacity over a conventional filter

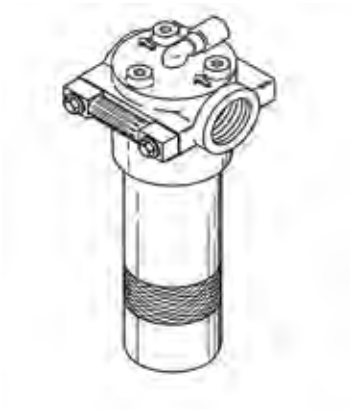
Length	884.7 mm (34.83 in)
Diameter	152 mm (6 in)
Weight	28.5 kg (63 lb)
Ports	2 in SAE 4-bolt flange
Bypass	none
Working pressure	20,790 kPa (3000 PSI)
Maximum flow rate	757 lpm (200 gpm)
Operating temperature	-29° to 121°C (-20° to 250°F)

Cartridge Elements for 185-1153 Filter Group				
Nominal Micron Rating	**Media Material**	**Dirt Holding Capacity**	**Height and Diameter**	**Part No.**
8	Synthetic	--	657.0 mm (25.87 in), 127.0 mm (5.0 in)	185-1377
18	Synthetic	104 g (0.23 lb)	657.0 mm (25.87 in), 127.0 mm (5.0 in)	185-1376

185-1154 High Pressure Filter Group

SMCS Code: 5068-070
Model: All Cat® bulk hydraulic fluid storage tanks with pneumatic pumps
Warranty: Six Months

- Used to filter oil in high-volume applications
- Provides extended time between element changes
- Uses synthetic fiber filter elements
- Especially suited in the output line from 4C-7195 Dispersing Pump and 4C-7228 Dispersing Pump
- Filter head is made of cast aluminum and bowl is made of impact-extruded aluminum for strength and durability
- Visual dirty element indicator shows when to change element
- Filter has increased dirt holding capacity over a conventional filter



Length	29.2 cm (11.5 in)
Diameter	89 mm (3.5 in)
Weight	2.49 kg (5.5 lb)
Ports	3/4 in SAE O-ring
Bypass	345 kPa (50 PSI)
Working pressure	13,790 kPa (2000 PSI)
Maximum flow rate	75 lpm (20 gpm)
Operating temperature	-29° to 121°C (-20° to 250°F)

Cartridge Elements for 185-1154 Filter Group				
Nominal Micron Rating	**Media Material**	**Dirt Holding Capacity**	**Height and Diameter**	**Part No.**
Cartridge Elements for 185-1154 Filter Group				
5	Synthetic	4 g (0.14 oz)	206.2 mm (8.12 in), 63.5 mm (2.5 in)	185-1378
18	Synthetic	9 g (0.31 oz)	206.2 mm (8.12 in), 63.5 mm (2.5 in)	185-1379

9U-5968 Hydrostatic Filter Group

SMCS Code: 5050-041, 3200-019, 3218-070
Model: All models
Warranty: Six Months

- Used to filter out contamination (particles) after catastrophic pump or motor failure
- 6-micron absolute rating
- Works in closed-loop hydrostatic hydraulic systems
- Simple to install, as rectifier block automatically routes oil through filter in correct flow direction, regardless of inlet and outlet connections
- Can be permanently attached to system or vehicle
- Easily fitted with currently available quick disconnect fittings for fast and easy installation — one unit can serve several machines

Overall size	300 x 250 x 558 mm (12.0 x 10.0 x 22.0 in)
Maximum working pressure	41,364 kPa (6000 PSI)
Flow rate	342 lpm (90 gpm)
Filter rating	6-micron, absolute
Inlet/outlet port connection	1 1/4 in quick-disconnect

(Continued)

9U-5968 Hydrostatic Filter Group (Continued)

SMCS Code: 5050-041, 3200-019, 3218-070
Model: All models
Warranty: Six Months

Nominal Micron Rating	Media Material	Dirt Holding Capacity	Height and Diameter	Description	Part No.
Elements for 9U-5968 Filter Group					
6	Cellulose	94 g (0.21 lb)	374 mm (14.72 in), 79 mm (3.11 in)	--	9U-5966
Service/Repair Parts					
--	--	--	--	Valve - Check	9U-5969
--	--	--	--	Seal Kit	9U-5967
--	--	--	--	QD Nipple[1]	4C-5093
--	--	--	--	QD Coupler[2]	4C-5094

[1] 201-8057 Dust Cap
[2] 263-2839 Dust Cap

6V-4160 Hydraulic Transmission Test Group
Discontinued — Service Parts Available

- Discontinued and replaced by both 1U-5481 Pressure Gauge Group and 1U-5482 Pressure Adapter Group
- 6V-0198 Repair Kit available, consisting of box (1), gauge panel (2), tray (3) and cover (4)

Reference
REG00452, Testing and Adjusting Module, Manual for Testing and Adjusting Power Shift Transmissions

Part Number[1]	Description	Size	Qty.
8T-0850	Pressure Gauge	0 - 3400 kPa (0 - 580 PSI)	3
8T-0851	Pressure Gauge	0 - 15850 kPa (0 - 2300 PSI)	--
8T-0852	Gauge Group - Pressure	0 - 39 960 kPa (0 - 5800 PSI)	--
8T-0848	Gauge GP - Pressure (3)	0 - 400 kPa (0 - 58 PSI)	--
8T-0846	Pressure Gauge	0 - 1000 kPa (0 - 145 PSI)	--
8T-0849	Pressure Gauge	0 - 2000 kPa (0 - 290 PSI)	--
6V-4144	Coupler Assembly (For 42000 kPa)	--	8

[1] All part numbers in the table have a six month warranty

Hydraulic Transmission Test Group Hardware

Item	Description
7	Bearing
8	Tachometer Drive Adapter Assembly
9	Cover
10	Gear Assembly
18[1]	Nipple, 1⁄8 in NPT Internal — two with 5K-5068
[1]Item 2 and Item 18 are part number 6V-4142	

(Continued)

Hydraulic Transmission Test Group Hardware (Continued)

Hardware				
Item	**Part No.[1]**	**Description**	**Detail**	**Qty.**
1	1S-2432	Tachometer Drive Cable Assembly	--	--
2[2]	177-7861	Hose Assembly	--	8
2[2]	6V-4142	Nipple Unvalved	--	8
2[2]	6V-4143	Coupler Assembly	--	8
3	3B-7740	Nipple - Pipe	152.4 long (1/4 in NPT x 6 in)	--
4	3B-7734	Adapter STR	76.2 long (1/8 in NPT x 3 in)	3
5	3B-7263	Nipple - Pipe	51 long (1/8 in-27 NPT x 2 in)	--
6	3B-7733	Nipple - Pipe	38.1 long (1/8 in NPT x 1.5 in)	2
11	6V-3966	Pressure Test Valve, 1/4 in-18 NPTF external	External, 1/4 in NPT	8
12	6V-3965	Nipple Assembly	External, 9/16 in SAE Thread	2
13	5P-3501	Adapter, 9/16 in-18 SAE external to 1/4 in-18 NPTF internal	9/16 in-18 Ext. Thread, 1/4 in-18 NPT Int. Thread	6
13	3J-1907	O-ring Seal for 5P-9617 Adapter	Also part of 7M-8489 (2), Item 15 below	6
14	3J-7354	Seal - O-ring - STOR	O-ring Seal for 8C-3446 Valve	3
14	5P-2937	Adapter - O-ring to Pipe	7/16 in-20 Ext. Thread, 1/4 in-18 NPT Int. Thread	3
15	7M-8489	Adapter Assembly, 90° elbow 9/16 in-18 SAE external to 1/4 in-18 internal	90 degree, 9/16 in-18 Ext. Thread, 1/4 in-18 NPT Int. Thread	2
16	6V-3989	Plain Nipple, Internal, 1/4 in NPT	1/4 in NPT Internal	2
17	5K-5068	Nipple - Pipe Hexagon	1/8 in-27 NPTF Thread - Attach to 6V-4142	2
19	3D-2675	Adapter	--	2
20	3D-8884	Elbow (90°)	90 degree, 1/4 in NPT	--
21	3K-0360	Seal - O-ring - STOR (SAE 3/4 - 16)	--	2
21	5P-4674	Adapter - Straight Thread - O-ring	3/4 in-16 Ext. Thread, 1/2 in-20 Internal Thread	2
22	5P-4675	Adapter - STR	1/2 in-20 Ext. Thread, 1/4 in-18 NPT Int. Thread	2
22	1J-9671	Seal	--	2
23	3B-6552	Elbow - 90° Pipe	90 degree, 1/8 in-27 NPTF	2

[1] All part numbers in the table have a six month warranty
[2] Included in Hose Group

5P-5260 Transmission Test Cover

SMCS Code: 3000-038
Model: 16G, 14G
Warranty: Six Months

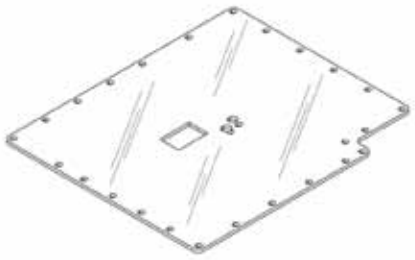
- Used for visual inspection and easier testing of articulated motor grader transmissions
- Transparent plastic sheets bonded to flat, rigid steel frames; construction allows them to be used on transmissions having components protruding outside case which occurs on articulated motor grader transmissions
- If replacement is necessary, the plastic sheet material can be ordered from:
  Cope Plastics
  1710 W. Detweiller Drive
  Peoria, IL 61614

When ordering, request MP1880 Elastomer, 0.5 mm (0.02 in) thick in the size needed. Use proper adhesive to bond the new plastic to the steel frame or repair the bond. Bonding instructions are provided with the adhesive.

Part Number	Description
5P-5260	Transmission Test Cover

FT2936 Test Cover (Transmission)

SMCS Code: 3000-038
Model: 16H Motor Grader
Warranty: None



- Used for visual inspection and easier testing of articulated motor grader transmissions
- Transparent plastic is bonded to flat, rigid steel frames
- Required for transmissions having components protruding outside case which occurs on this articulated motor grader transmission
- Made from a modified 5P-5260 Test Cover

FT3177 Cover-Transmission Test

SMCS Code: 3000-038
Model Usage: 735B, 740B, 740B Ejector
Warranty: None

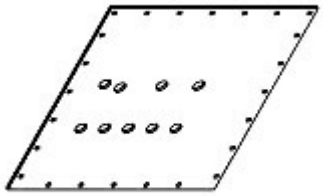
- The FT3177 Cover-Transmission Test is used for visual inspection and easier testing of articulated truck transmissions.
- The cover is fabricated from transparent plastic and controls oil splashing during testing.
- This cover is required for transmissions having connecting components protruding outside the case during bench testing of these transmissions.

Specifications	
Material	1/4 " Transparent Plexiglass

FT3181 Cover-Transmission Test

SMCS Code: 3000-038
Model Usage: 621H, 623H, 627H, 631H
Warranty: None

- Used when testing and troubleshooting the transmission hydraulic system
- Used for visual inspection and easier testing of wheel-scraper transmissions
- Transparent material with access holes to allow connection of pressure gauges to pressure taps in the control valve
- Required for transmissions having connecting components protruding outside case which occurs during bench testing of these transmissions
- Controls oil splashing during testing



Specifications	
Material	1/4 Transparent Plexiglass

6V-4041 Nut Spanner Wrench
6V-4070 Nut Spanner Wrench

SMCS Code: 3150-017, 3258-017, 4205-010, 7051-029, 7054-077
Model: 65, D4E Tractor, 941B and 951C Track Loaders
Warranty: Six Months

Part Number	Description
6V-4070	Nut Spanner Wrench
6V-4041	Nut Spanner Wrench

- Either of these 3/4 inch drive wrenches can be used to remove and install bearing locknut in transfer gear

5P-6590 Wiring Tester Group
Discontinued — Service Parts Available

Warranty: Six Months

Item	Description
1	Ground Adapter Assembly (16-Pin)
2	Continuity Tester
4	Test Harness Assembly (10-Pin)
5	Ground Adapter (35-Pin)
6	Ground Adapter Assembly (10-Pin)
7	Harness Assembly (2-Pin)
8	Battery Lead Wire (Black)
9	Battery Lead Wire (Red)
11	Test Prod
12	Lamp (5)

Item	Part Number	Description
--	5P-6590	Tester Group
3	5P-7277	Voltage Tester
10	1S-9532	Wire Assembly - Jumper

Auxiliary Equipment for Use With 5P-6590 and Discontinued 1P-3550 Tester Group

Warranty: Six Months

Parts Group[1]	Description
666B Rear Engine Electric Start (with 16-pin connectors)	
657A and 666A (with 16-pin connectors)	
657B and 666B (with 10- and 16-pin connectors)	Cable Assembly, 10-pin to 16-pin; 1P-3072 and 1P-3077 Cable Assemblies (part of 1P-3550) can be used
657A and 666A (with 10-pin connectors)	Cable Assembly, 10-pin to 16-pin; 1P-3072 and 1P-3077 Cable Assemblies (part of 1P-3550) can be used
[1]Overlay (included with 1P-3550)	

Part No.[1]	Description	Detail
657A and 666A (with 7-pin connectors)		
1P-2861	Cable Assembly	(7-Pin to 16-Pin)
773 Truck		
1P-2861	Cable Assembly	(7-Pin to 16-Pin)

[1] Overlay (included with 1P-3550)

Electrical Connector Removal and Crimp Tools

SMCS Code: 3168-010

Model: Models with CE-Series Electrical Connectors

Warranty: Six Months

- Required to service “CE” (Cat® Environmental) series electrical connectors; “CE” connectors replace VE (Vehicle Environmental) connectors which are used in harnesses where high temperatures, a large number of contacts, or higher current capacity contacts are needed
- Enable repair to be made without replacing complete wiring harness
- Removal tool needed to remove contacts without damaging connector retaining clips
- Crimping necessary when replacing “CE” contacts
- Solder will not make a good bond with contact material

Reference

SEHS9065, Special Instruction

Item	Part No.	Description
1	8T-5319	Connector Tool Group
1	4C-4071	Removal Tool, 4 - 6 Gauge
1	4C-4072	Removal Tool, 8 - 10 Gauge
1	4C-4073	Removal Tool, 12 - 14 Gauge
1	4C-4074	Removal Tool, 16 - 18 Gauge
2	4C-4075	Crimp Tool, 4 - 10 Gauge
2	4C-4076	Retainer Assembly, 4 - 6 Gauge - right and left sides
2	4C-4077	Retainer Assembly, 8 - 10 Gauge - right and left sides
2	4C-4078	Jaw Assembly (1)
3	1U-5804	Crimp Tool, 12 - 18 Gauge

1P-3550 Wiring Tester Group
Discontinued — Service Parts Available

References
SMHS7683, Troubleshooting 1P-3550 Tester Group
SMHS7424, Special Instruction, Replacing Harness with Detachable Harness

1P-3550 Wiring Tester Group	
Item	Description
2	Overlay (657A, 666A — 16-pin), (657B, 666B — 16-pin, 10-pin)
3	Overlay (773 Truck), also pre EMS 769 Trucks
4	Battery Lead Wire (Black)
5	Ground Adapter Assembly
6	Receptacle Adapter Cable Assembly (10-pin to 16-pin)
7	Plug Adapter Cable Assembly (10-pin to 16-pin)
9	Jumper Wire Assembly
10	Test Prod
11	Battery Lead Wire (Red)
12	Circuit Tester

Item	Part No.[1]	Description	Detail
1	1U-2863	Overlay	(657A, 666A - 7-pin, 10-pin) (666B Rear Engine Electric Start - 16-pin) Overlays are imprinted on both sides to cover the 666B with electric start rear engine also.
8	1S-9532	Wire Assembly - Jumper	--
9	7N-5876	Bulb	Not Shown
9	8M-0454	Fuse	Not Shown

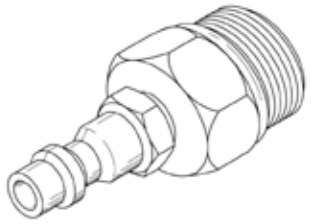
[1] All part numbers in the table have a six month warranty

FT0834 Clutch Testing Nozzle
SMCS Code: 1451-017, 3000-017, 3150-016, 3150-017, 3150-017RE, 4256-017
Model: D4D Tractor, 920 and 930 Traxcavators, and 613 Tractor-Scraper
Warranty: None

- Used on power shift transmissions to make operational check of each clutch or test seals such as those on input shaft

FT1387 Test Fitting

SMCS Code: 3050-012, 3050-025
Model: All G-Series Motor Graders
Warranty: None



- Used with 5P-6225 Test Group to obtain directional clutch pressure (2 required)
- Installed in manifold of directional clutch cover

6V-4074 Nut Spanner Wrench
6V-4070 Nut Spanner Wrench

SMCS Code: 3150-017, 3258-017, 4109-017, 4208-010, 7051-029, 7054-077
Model: D4E, IT28, 926E, 6V-4074 — 16G and 14G, 6V-4070 — 12G
Warranty: Six Months

- Used to remove and install transmission input gear retainer nut in transfer gear case
- Either former, or later improved wrenches, can be used

Part Number	Description
6V-4070	Nut Spanner Wrench
6V-4074	Nut Spanner Wrench

153-8963 Threaded Adapter
Essential Tool

SMCS Code: 3001-015
Model: TH103 Telehandler
Warranty: Six Months

- Used to remove oil baffle plate from transmission
- Used with standard 5P-0074 Slide Hammer Puller
- Also used for other general purpose pulling applications

Reference

SENR1242, Disassembly and Assembly TH103 Telehandler Transmission

Capacity	1814.4 kg (2 tons)
Male thread	5/16 - 18
Female thread	5/8 - 18
Hex size	25.4 mm (1.00 in)
Overall length	57.2 mm (2.25 in)

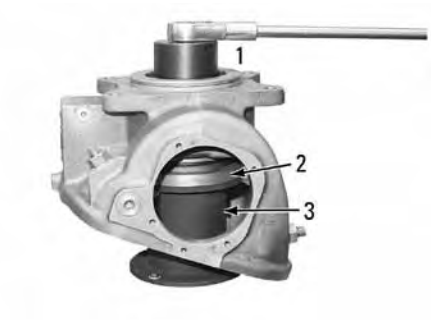
Part Number	Description
153-8963	Threaded Adapter

FT1681 Motor Support

SMCS Code: 4351-015, 4351-016
Model: 973
Warranty: None

- Used for assembling track motors
- Bearing adjustment procedure requires rotating torque of drive plate to be checked while bearing retaining locknut is being tightened
- FT1681 Support and FT1549 Fixture are used to hold drive plate while housing (instead of drive plate) is rotated

Item	Part No.	Description
1	FT1532	Spanner Socket
2	FT1549	Fixture
3	FT1681	Motor Support



FT0822 Pinion Shaft Bearing Race Adapter

SMCS Code: 3000-011
Model: No. 16 Motor Graders
Warranty: None

- Used with the necessary pullers to remove pinion shaft rear bearing race
- Material: mild steel

Flange Nut Sockets

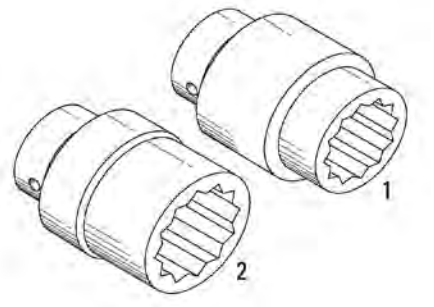
SMCS Code: 3001-015, 3001-016
Model: TH103 Telehandler
Warranty: None

- Used to remove and install flange nuts on transmission where clearance is limited
- Used with standard 3/4 or 1 inch square drive ratchet
- Made from standard size sockets
- Modified sockets provide complete engagement of nut
- Reduces risk of damage

Reference

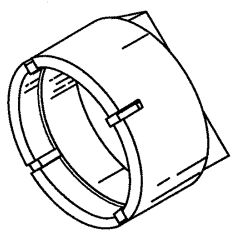
SENR1242, Disassembly and Assembly TH103 Telehandler Transmission

Modified Sockets				
Item	**Part No.**	**Size**	**Square Drive**	**Made From Socket:**
1	FT2591	2 in Hex	3/4 in	214-6614
2	FT2592	2 3/8 in Hex	1 in	5S-6077



9U-6237 Locknut Spanner Wrench

SMCS Code: 3150-010, 3200-010, 0720, 0721
Model: CP-563 and CS-563 Compactor
Warranty: Six Months



- Used to remove and install locknut on 1G-8830 Gearbox
- Used with 3/4 inch square drive ratchet or torque wrench to correctly set pre-load on bearing
- Makes removal and installation faster and easier (also reduces damage to nut)

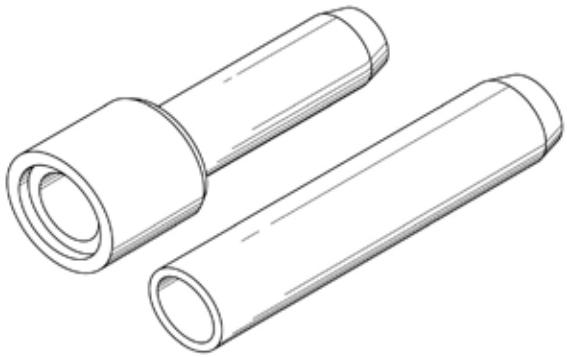
Reference
June 1992, After Failure Service Letter

Inside diameter	106.0 mm (4.17 in)
Wall thickness	12.7 mm (0.50 in)
Length	76 mm (3.0 in)
No. teeth	4
Tooth inside diameter	101.8 mm (4.00 in)
Tooth width	9.02 mm (0.355 in)

Part Number	Description
9U-6237	Locknut Spanner Wrench

FT0587 Driver Tool

SMCS Code: 3000-012
Model: 769 Truck
Warranty: None



- Used to install rubber bushings in engine, radiator and transmission support mounts
- Material: SAE 1020 steel

Checking Fixtures

SMCS Code: 3003-025
Model: 627, 627B, 637 and 637D Scrapers
Warranty: None

FT1380

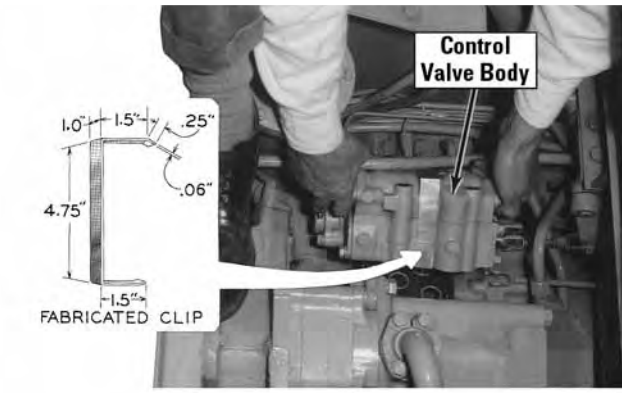
FT1381

- Used to determine shims required for adjusting backlash between pinion and transfer gear on transmission
- FT1380 Fixture used to check assembled height of transmission pinion, bearing and cage
- FT1381 Fixture used to check assembled height of transfer gear shaft, bearing and cage assembly
- Difference between assembled height of parts and standard provided by fixture is used to calculate shim pack thickness for each assembly
- Large drawings available

FT0542 Clip

SMCS Code: 3150-016
Model: 922, 944, 966A Wheel Loaders and 955 and 977 Track Loaders
Warranty: None

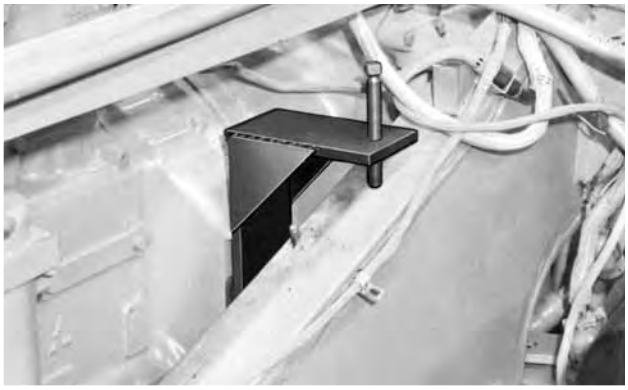
- Used to prevent detent from dropping out of hydraulic controls into transmission



FT1584 Support Bracket

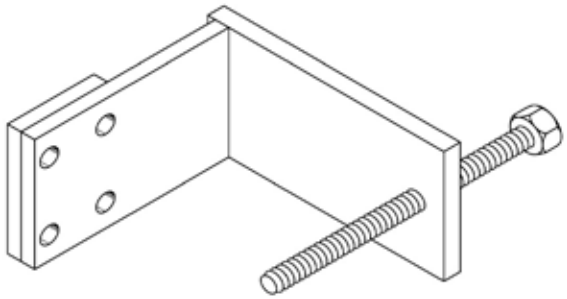
SMCS Code: 3003-010
Model: 814B, 815B, 816B, 966D, 966E
Warranty: None

- Support flywheel end of engine when transmission removed
- 8S-8089 Forcing Bolt used with each bracket



FT2807 Engine Support Bracket Assembly

SMCS Code: 3003-010
Model: 814 Wheel Dozer, 815F Soil Compactor, 816F Landfill Compactor
Warranty: None



- Used to support flywheel end of engine when transmission is removed
- 8B-7552 Forcing Bolt used with each bracket

Reference
RENR6093, 814F Wheel Tractor, 815F Soil Compactor, and 816F Landfill Compactor Powertrain Disassembly and Assembly

Tool for 12G, 14G, 16G Transmission Hydraulic Control Valves

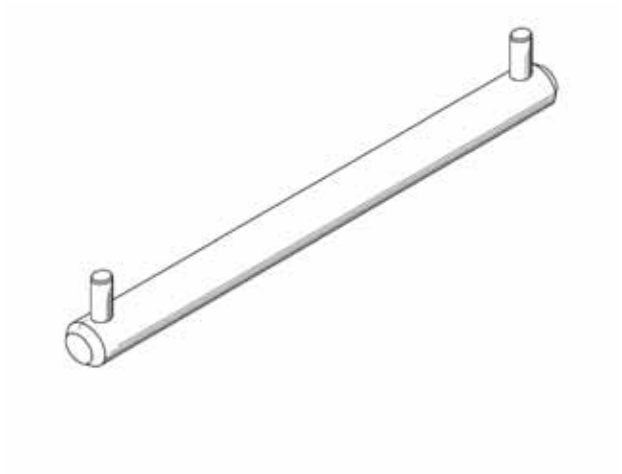
SMCS Code: 3152-010
Model: 2P-5816 and discontinued 3P-0843 Transmission Selector and Pressure Control Valve Group
Warranty: Six Months

- FT1195 Pliers used to remove and install 6P-4700 Spool Assembly retaining ring in 2P-5816 and discontinued 3P-0843 Transmission Selector and Pressure Control Valve Group

Part No.	Description
FT1195	Pliers

FT1417 Shaft Alignment Tool

SMCS Code: 3189-012
Model: D8K, 583K, D9H and 594H Power Shift Transmissions
Warranty: None

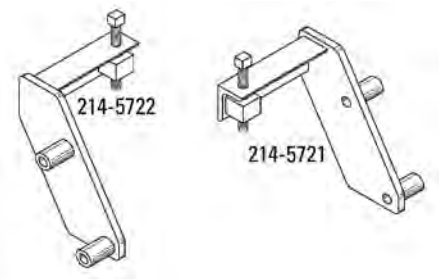


- Required for installing planet gear shafts in front carrier
- Used to align retaining pin holes in shafts and carrier
- With shaft installed but not pressed into its bore, position tool vertically with 1 end in pin hole of carrier and other end aligned with hole in shaft; this correctly positions shaft for installation of retaining pin

214-5721 Engine Support Bracket Assembly (Right Side)
214-5722 Engine Support Bracket Assembly (Left Side)

SMCS Code: 3001-010
Model: 824G Wheel Dozer (Emissions Update) with 3406E Engine
Warranty: Six Months

- Used to support rear of engine during and after transmission removal (brackets serve as temporary engine supports since transmission contains rear engine/ transmission mounts)
- Attaches to engine flywheel
- Adjustable square head set screws (5/8 - 11) allow rear of engine to be raised or lowered (helps align transmission during installation)
- Service Part: 2H-3897 Square Head Setscrew



Reference
RENR4373, Disassembly and Assembly, 824G Wheel Dozer, 825G Soil Compactor and 826G Landfill Compactor, Machine Systems

Part Number	Description
214-5721	Engine Support Bracket Assembly (Right Side)
214-5722	Engine Support Bracket Assembly (Left Side)

311-5882 Engine Support Group
Essential Tool

SMCS Code: 1001
Model: M-Series Motor Graders
Warranty: Six Months

- Replaces cancelled 271-8547 Engine Support Assembly (RH) and discontinued 280-7793 Engine Support Assembly (LH)
- Used to support rear of engine during removal and installation of transmission on all M-Series Motor Graders
- Used with eight 8T-6430 Bolts (M20-2.5 x 50 mm) and eight 7X-3383 Washers (M20) (not included)
- Support assemblies attach to flywheel housing on both sides of engine
- Engine weight is supported on frame rails
- Detent pin and lock-bolt allow fast, easy set-up
- Base plate bolt provides engine height adjustment during transmission installation (helps properly align engine and transmission)

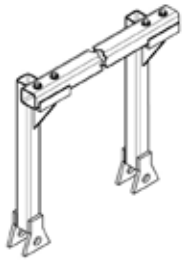
References
Service Manual, M-Series Motor Grader Disassembly and Assembly
NEHS1014, Tool Operating Manual, 311-5882 Engine Support Group

Part Number	Description
311-5882	Engine Support Group

⚠ WARNING
To avoid personal injury or death, always use engine supports in pairs, one on each side of the engine.

211-1635 Engine Transmission Support Group, 207-8158 Ring Spacer
Essential Tool

SMCS Code: 3000-010 1000-010
Model: All Articulated Trucks
Warranty: Six Months



European Union compliant, CE marked

- Used to support rear of engine during transmission removal/installation or front of transmission during engine removal/installation
- Used with a come-along and/or overhead hoist to adjust position of engine/transmission during removal/installation
- Provides unobstructed access to remove or install transmission/engine
- Mounts directly to existing ROPS structure using ROPS pins
- 207-8158 Ring Spacer prevents rubber ROPS mount from collapsing (2 required; not included in 211-1635)

References

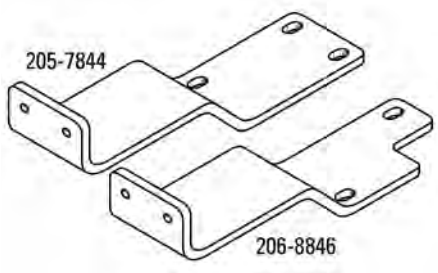
RENR3446, 725/730 Engine Supplement
RENR3448, 725/730 Power Train
RENR5137, 735/740 Engine Supplement
RENR5138, 735 Power Train
RENR5139, 740 Power Train

Maximum load limit	1815 kg (4000 lb)

Part Number	Description
211-1635	Engine Transmission Support Group
207-8158	Ring Spacer
Service/Repair Parts	
207-8157	Bracket Assembly
208-5040	Engine Support Tube
1D-4569	Bolt
1F-7958	Full Nut (1/2-13)
5P-8245	Hard Washer (fork mounting hardware)

205-7844 Engine Support Bracket (Left Side), 206-8846 Engine Support Bracket (Right Side)
Essential Tool

SMCS Code: 3000-011
Model: 980G and 980G Series II Wheel Loaders
Warranty: Six Months



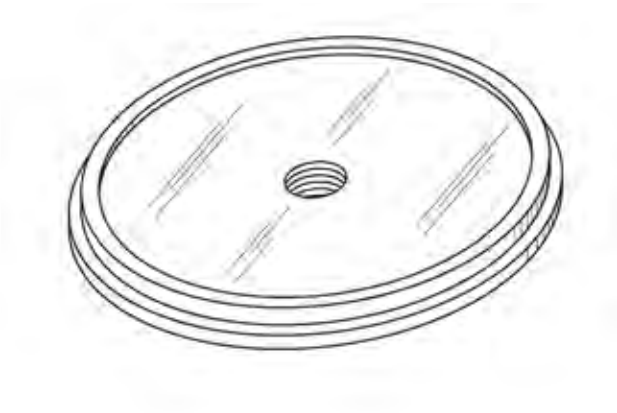
- Used to support rear of engine during and after transmission removal (brackets serve as temporary engine supports since transmission contains rear engine/transmission mounts)
- Bolts to flywheel housing
- Brackets have adjustable 4B-3626 Square Head Set Screws allowing rear of engine to be raised or lowered (helps align transmission during installation)

Part Number	Description
205-7844	Engine Support Bracket (Left Side)
206-8846	Engine Support Bracket (Right Side)

FT1212 Seal Driver

SMCS Code: 3280-014
Model: 12F, 14E, 120, 140, 785, 789
Warranty: None

- Used to install 6D-3080 Seal Assembly in transfer gear case in 12F, 14E, 120 and 140 Motor Graders, and in differential and pinion gear group on 785 Truck
- Material: SAE 1020 steel



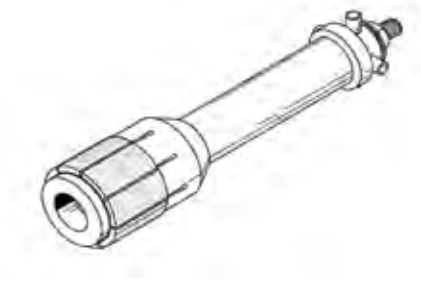
149-7211 End Play Measurement Tool
Essential Tool

SMCS Code: 3176-016
Model: 793C Off-Highway Truck
Warranty: Six Months

- Used to measure end play in transfer gear group (only acceptable method)
- Expands in gear bore providing means for accurate end play measurements
- Tool can be used on other components with same size bore
- Hardened and spring tempered for long durable life

Reference

SENR5691, Service Manual, 793B Truck Power Train



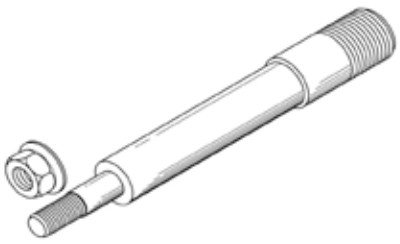
Outside diameter (knurled end)	85.6 mm (3.37 in)
Overall length	381 mm (15.0 in)
Hex nut	4K-0367
Hard washer	5P-8247

Part Number	Description
149-7211	End Play Measurement Tool

FT2934 Endplay Stud Assembly

SMCS Code: 3002-016
Model: 14H Motor Grader Serial Number ASE1-UP and 16H Motor Grader Serial Number ATS1-UP
Warranty: None

- Used to check endplay of directional clutch
- Used with a dial/digital indicator and a 5/15 - 18 flange nut
- Allows clutch shaft to be raised and lowered with cage assembly in position allowing mechanic to quickly determine endplay
- Screws into 3/4 - 10 threaded hole in end of directional clutch shaft
- Material: SAE4140 steel



References

RENR4195, Disassembly and Assembly, 14H Motor Grader Power Train, Transmission and Transfer Gear Assembly
RENR4178, Disassembly and Assembly, 16H Motor Grader Power Train, Transmission and Transfer Gear Assembly

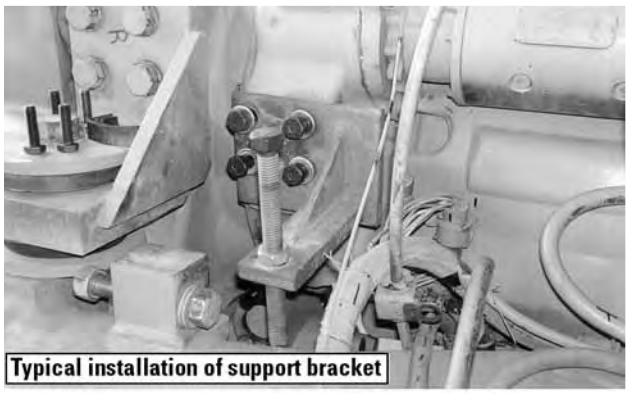
FT1493 Engine Support Bracket

SMCS Code: 1166-010, 3200-010
Model: 943, 953, 963 and 973 Track Loaders
Warranty: None

- Aid in removing transmission (2 required)
- Bolted to flywheel housing, and with use of forcing screws resting on ROPS retaining bolts, support engine while transmission unit is removed

Engine Support Bracket Assemblies

SMCS Code: 3400-010
Model: 120H, 135H, 140H, 143H, 160H, and 163H Motor Graders
Warranty: Six Months

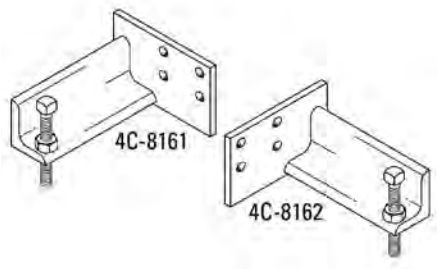


Typical installation of support bracket

- Used to support rear of engine during and after transmission removal (brackets serve as temporary engine supports since transmission contains rear engine/transmission mounts)
- Brackets attach to rear of engine as shown in photo
- Brackets have adjustable square head set screws which allow rear of engine to be raised or lowered (helps align transmission during installation)
- Square head setscrew: 2H-3897
- Full nut: 4K-0367

Reference for Engine Support Bracket Assemblies

Service Manual Module

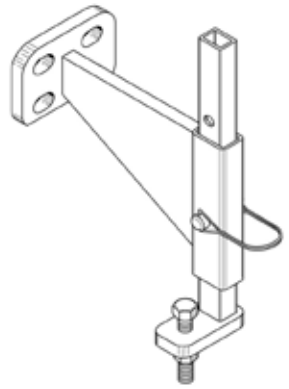


Part Number	Description	Application
4C-8161	Engine Support Bracket Assembly (left side) 3306 Engine	3306 Engines in 140H, 143H, 160H, and 163H Motor Graders
4C-8162	Engine Support Bracket Assembly (right side) 3306 Engine	3306 Engines in 140H, 143H, 160H, and 163H Motor Graders

209-8351 Engine Support Assembly

SMCS Code: 1154, 3030-010
Model: 120H Serial # ALZ, 135H Serial # AMX, 12H Serial # AMZ, 140H Serial # APM, 143H Serial # APN, 160H Serial # ASD, 163H Serial # ARL, 14H Serial # ASE, 16H Serial # ATS
Warranty: Six Months

- Used to support rear of engine during removal and installation of transmission (required since transmission contains rear engine/transmission mounts)
- Versatile tool — works on all motor grader models with emissions update (except 24H)
- Bracket bolts to flywheel housing (mounting bolts not included)
- Adjustable bolt and locknut allows rear engine height adjustment during transmission installation (helps with alignment)
- 2 required



Part Number	Description
209-8351	Engine Support Assembly
Service/Repair Parts	
164-4538	Hex Bolt
4K-0367	Nut - Full

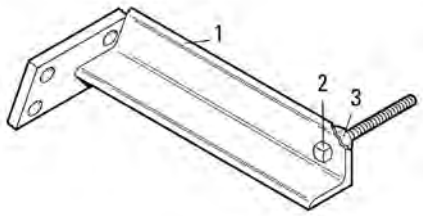
Engine Support Bracket Assemblies

Essential Tool

SMCS Code: 3108-01
Model: 963C
Warranty: Six Months

- Used to support rear of engine while removing or installing pump drive assembly
- Easy to install onto four-bolt flanged area of bell housing
- Height adjustments can be made with adjustable setscrews

Item	Description
1	Engine Support Bracket Assembly (left side)

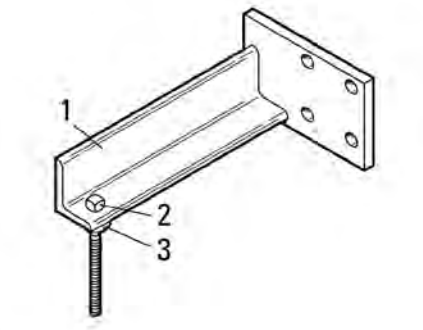


Item	Part Number	Description
3	4K-0367	Nut - Full
2	2H-3897	Square Headed Setscrew

Reference for Engine Support Bracket Assemblies

SENR1827, Service Manual

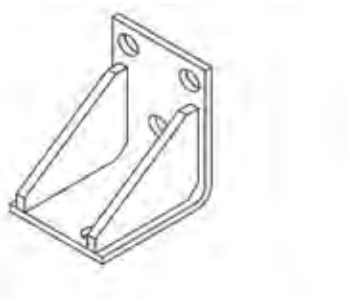
Item	Description
1	Engine Support Bracket Assembly (right side)



Item	Part Number	Description
2	2H-3897	Square Headed Setscrew
3	4K-0367	Nut - Full

158-2282 Engine Bracket Assembly
Essential Tool

SMCS Code: 3108-010
Model: 5130 Mass Excavator and Front Shovel
Warranty: Six Months



European Union compliant, CE marked

- Used to provide additional engine support when removing or installing pump drive (2 required)
- Correctly supports engine without damaging vehicle
- Easy installation provides faster service
- Height x length x width: 226.0 x 200.0 x 160.0 mm (8.9 x 7.9 x 6.3 in)

Reference

SENR1472, Disassembly and Assembly 5130B Excavator Machine Systems

Part Number	Description
158-2282	Engine Bracket Assembly

6V-4157 Transmission Test Group

SMCS Code: 3200-038, 5050-038
Model: 943, 953, 963, 973
Warranty: Six Months

- Replaces 6V-3015 Test Group
- Used during troubleshooting of transmission
- Pressures can be checked at 12 locations in hydrostatic drive system

Reference

Service Manuals

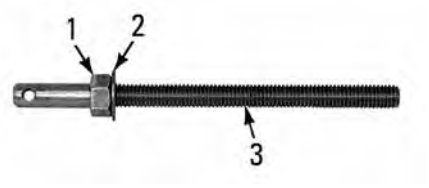
Item	Part No.	Description	Detail	Quantity
1	9U-6219	Tool Box	--	--
1	2P-8289	Holder Block	Block (not shown)	--
2	6V-3024	Bar Group	--	--
2	0S-1614	Bolt	Part of 6V-3024	4
2	8T-0863	Gauge - Pressure	250 kPa (36 PSI)	2
2	8T-0861	Gauge - Pressure	60,000 kPa (8700 PSI)	2
2	8T-0855	Gauge - Pressure	4,000 kPa (580 PSI)	5
2	6V-3966	Pressure Test Valve, 1/4 in-18 NPTF external	Valved External Nipple, 1/4 in NPT	9
3	177-7860	Hose Assembly	--	9
3	3B-6552	Elbow - 90° Pipe	--	9
3	6V-4143	Coupler Assembly	--	18

Tools for Adjusting Mechanical Valve Linkage

SMCS Code: 3000-011
Model: 943, 953, 963, 973
Warranty: Six Months

- Used to move underspeed valve to maximum height for linkage adjustment

Item	Description
3	Rod



Item	Part No.	Description
--	6V-2067	Underspeed Raising Tool Group
Service/Repair Parts for 6V-2067		
1	1D-4718	Nut
2	4B-4279	Washer

6V-3085 Fixture Assembly

Part Number	Description
6V-3085	Fixture Assembly

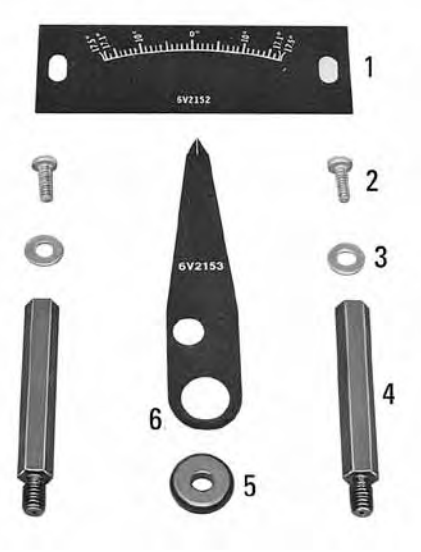
- Used to position underspeed linkage when centering pilot valve

6V-2155 Protractor Group

Item	Part No.	Description	Qty.
--	6V-2155	Protractor Group	--
Service/Repair Parts for 6V-2155			
2	3K-6881	Screw	2
3	4B-4276	Flat Washer	2
5	9L-6074	Grommet	1
6	6V-2153	Pointer	1

- Used to determine center and full speed, forward and reverse positions of servo valve

Item	Description	Qty.
1	Protractor	1
4	Support	2



6V-2060 Synchronizing Adjustment Bar

- Used with 8S-2328 Indicator Group to synchronize right and left servo valves

Item	Description
1	Indicator, part of 8T-5096 Dial Indicator Group

Item	Part No.	Description
2	6V-2060	Adjustment Bar

6V-2166 Puller Group

- Discontinued and replaced by 156-7100 Light Duty Puller Group
- Used to remove control valve venturi from transmission

Item	Part No.	Description
--	6V-2166	Puller Group
Service/Repair Parts for 6V-2166 Group		
1	6V-2164	Puller Assembly
2	2D-6392	Seal (Part of 6V-2164)
3	6V-2165	Shank

6V-2070 Underspeed Cut-In Tool Group
6V-6183 Bracket

SMCS Code: 3224-025
Model: 943, 953, 963, 973
Warranty: Six Months

- 6V-6183 replaces discontinued 6V-4056 Bracket
- Used to determine underspeed cut-in and proper overspeed adjustment on hydrostatic transmissions
- 6V-6183 Bracket used to position 6V-2070 Tool Group on transmission on 943 and 953

Item	Description
3	Adapter

Item	Part Number	Description
--	6V-2070	Underspeed Cut-In Tool Group
Parts Serviced in 6V-2070 Group		
1	1D-5120	Nut
2	5B-9079	Nut

Reference for Underspeed Cut-In Tool Group

943, 953, 963 and 973 Service Manual

Part Number	Description
6V-6183	Bracket

6V-4072 Clutch Retainer Nut Spanner Wrench

SMCS Code: 3060-015, 3060-016, 3060-017, 3159-017, 3280-015, 3280-016, 3280-017, 4131-015, 4131-016, 4130-017
Model: 120G, 130G, 140G; 6V-4072—16G and 14G
Warranty: Six Months

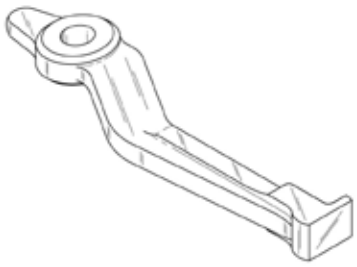
- Used in transfer case gear group to remove and install directional clutch retainer nut on 16G and 14G Motor Graders
- Either former or later improved wrenches can be used

Part Number	Description
6V-4072	Clutch Retainer Nut Spanner Wrench

FT0995 Jaws

SMCS Code: 1361-017ED, 1405-017, 3168-011, 3175-017, 3175-017FR, 3203-017, 4322-017, 7210-017
Model: 621, 623, 612, 663, 651E, 657E Tractor-Scrapers; 769C, 773B, 777, 785 Trucks; 768C, 772B, 776 Tractors
Warranty: None

- Used with 1P-0074 Slide Hammer Puller to remove bearing from transmission electronic speed sensor groups
- Fabricated from 1P-0071 Jaws



6V-6064 Transmission Test Cover Assembly

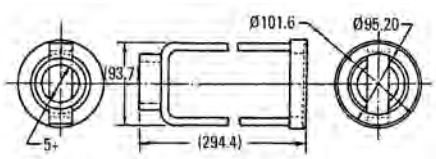
SMCS Code: 3000-038, 3000-081, 3155-081
Model: 657E Tractor-Scrapers; 768C, 772B, 776 Tractors; 769C, 773B, 777 Trucks
Warranty: Six Months

- Used when checking clutch pressures
- Cover helps prevent oil from splashing out and contaminants from falling into transmission during tests
- Cover made of 2 steel plates with rubber sheet laminated between plates; has holes that allow it to be bolted to transmission housing; holes in rubber sheet allow access to pressure taps

Part Number	Description
6V-6064	Transmission Test Cover Assembly

4C-3652 Clutch Spring Compressor Assembly

SMCS Code: 3052-012, 3060-017, 3150-017, 3400-017
Model: 508 Skidder; 416, 426, 428, 436, 438 and 446 Backhoe Loaders; and future product using Cat®'s countershaft transmission
Warranty: Six Months

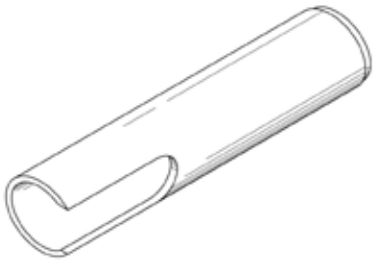


- Replaces 3 assemblies
- Used to compress transmission clutch springs so retaining ring can be removed or installed
- Guide collar attached to top of tools U-shaped bar provides positive locator for arbor press plunger during spring compression
- Increased versatility enables it to be used to service all versions of Funk, Turner-Spicer and Cat countershaft transmissions

Part Number	Description
4C-3652	Compressor As - Clutch Spring

126-0413 Relief Valve Spanner Wrench
127-0899 Spring Compressor, FT2508 Spring Compressor

SMCS Code: 3150-015, 3150-016, 0718
Model: TH62, TH63, TH82, TH83, and TH103 Telescopic Material Handler
Warranty: 126-0413 Relief Valve Spanner Wrench and 127-0899 Spring Compressor Six Months; FT2508 Spring Compressor: None



126-0413 Relief Valve Spanner Wrench

- Used to remove and install pressure regulator valve in T12000 Transmissions used in TH62, TH63, TH82, and TH83
- Spanner has pins to engage holes in pressure regulator
- Wrench design prevents damage to pressure regulator during removal and installation

127-0899 Spring Compressor

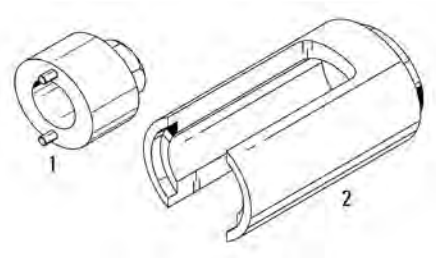
- Used to compress clutch spring for removal and installation of spring retaining ring on T18000 Transmission used in TH103 Telescopic Material Handler
- Used with shop arbor press for safer and easier removal of clutch spring retainer

FT2508 Spring Compressor

- Used to compress clutch spring for removal and installation of spring retaining ring in T12000 Transmissions used in TH62, TH63, TH82, and TH83
- Used with shop arbor press for safer and easier removal of clutch spring retainer

Reference for Relief Valve Spanner Wrench and Spring Compressor

SENR5840, Disassembly and Assembly, TH62, TH63, TH82, and TH83 Telehandlers, Power Train



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Reference for Relief Valve Spanner Wrench and Spring Compressor (Continued)

SENR5840, Disassembly and Assembly, TH62, TH63, TH82, and TH83 Telehandlers, Power Train

Item	Part Number	Description	Outside Diameter	Inside Diameter	Drive Size	Pin Diameter	Distance Between Centers of Pin	Pin	Length	Counter Bore Diameter	Com-pressor Reach
1	126-0413	Relief Valve Spanner Wrench	50.8 mm (2.00 in)	28 mm (1.1 in)	1 1/8 in hex	4.74 mm (0.187 in)	40.00 mm (1.575 in)	0L-0626 Bearing Shim Dowel	--	--	--
2	127-0899	Spring Compres-sor	92.0 mm (3.62 in)	66.5 mm (2.62 in)	--	--	--	--	161.5 mm (6.36 in)	79.6 mm (3.13 in)	152.0 mm (5.98 in)

Spring Compressors

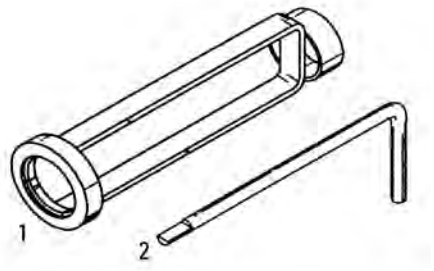
SMCS Code: 3060-017
Model: 416C, 426C, 428C, 436C, and 438C Backhoe Loaders
Warranty: Six Months

137-8102 Spring Compressor Assembly

- Used to compress transmission clutch spring to remove or install retaining ring
- Used with a shop arbor press
- Provides a safer and faster method to remove and install retaining ring (also helps reduce damage to retaining ring or piston)
- Designed to provide mechanic with easy access to retaining ring
- Guide collar attaches to top of fork providing positive location for arbor press while compressing the spring

137-8103 Spring Compressor

- Used to compress detent spring and ball to assemble shift fork shaft into transmission housing
- Provides a positive means of positioning detent ball, allowing shift fork shaft to be installed simultaneously
- L-shaped handle provides a positive grip and ensures correct orientation of tool during assembly



Reference

SENR1206, Service Manual, Disassembly and Assembly, 416C, 426C, 428C, 436C, and 438C Backhoe Loaders Power Train

Item	Part No.	Description	Overall Length	Outside Diam-eter of Base	Inside Diameter of Top Collar	Rod Diameter
1	137-8102	Spring Compressor Assembly	318 mm (12.5 in)	88.9 mm (3.50 in)	53.9 mm (2.12 in)	--
2	137-8103	Spring Compressor	255.5 mm (10.1 in)	--	--	11.11 mm (0.437 in)

318-1478 Spring Compressor
Essential Tool

SMCS Code: 3150-017
Model: 236B, 246B, 252B, and 262B Skid Steer Loaders; 416C, 426C, 428C, 436C, and 438C Backhoe Loaders with optional Power Shift Transmission
Warranty: Six Months

- Replaced discontinued 152-7055 Spring Compressor
- Used to disassemble and assemble the transmission clutch shaft assemblies
- Used to compress transmission clutch spring to remove and install retaining ring
- Use with shop arbor press
- Provides a method to remove and install retaining ring
- Designed to provide access to easily remove and install the retaining ring
- To aide in the assembly procedures of the piston motors in skid steer loaders

318-1358 Driver

- Used to support the end in the service press

Reference

SENR1206, Disassembly and Assembly, 416C, 426C, 436C, 428C, and 438C Backhoe Loaders Power Train

Part Number	Description	Outside Diameter	Inside Diameter	O.A.L.
318-1478	Spring Compressor	88.9 mm (3.50 in)	73.0 mm (2.87 in)	254.0 mm (10.00 in)

Countershaft Transmission Disassembly and Assembly Tooling

SMCS Code: 3050-016, 3150-017
Model: 446, 910E, IT12B, IT14B; future product using Cat®'s countershaft transmission
Warranty: Six Months

- Used in disassembly and assembly of 1, 2 or all 3 versions of the first generation of 135 mm (5.31 in) (clutch diameter) countershaft transmissions
- Provide simplest, most effective way to assemble and disassemble the 135 mm (5.31 in) clutch diameter countershaft transmission
- Disassembly and Assembly without these tools may result in improper assembly and damage to components, and will require considerably more time
- Bearing installers (or 4C-6137 Installer with spacers) required to install drawn cup needle bearings; bearing installers have 15° back angle to prevent damage to bearings thin-walled cup; provide positive stop to ensure bearings installed to proper depth to prevent damage to bearings if driven too far and become seated against a shoulder

NOTICE:
Installation of drawn cup needle bearings without
these tools may lead to bearing damage and failure.

- 4C-3652 (6) and 4C-6399 (11) Compressor Assemblies required during disassembly and assembly of clutch; used with shop arbor press to compress clutch spring for easy access to remove snap ring
- 4C-6143 Clutch Piston Installer (7) used during clutch reassembly; clutch pistons contain 2 lip seals that must be centered and inserted into their bores almost simultaneously; extremely difficult to do without this tool and could result in seal damage or improper installation
- 4C-6136 Lifting Bracket (9) used with overhead hoist to remove and install shaft assemblies; quickly and easily slips into grooves between sealing rings on end of shafts; shaft assemblies weigh 18 to 50 kg (40 to 110 lb) and, when oily, are difficult to hold by hand; safer to use lifting bracket
- FT2343 (10) and FT2342 (21) Covers used to protect ports and surface of transmission case when control valves are removed; prevent dirt and contaminants from getting into transmission and protect sealing surface from damage
- 4C-6172 Socket (14) used to remove solenoid valves on countershaft transmissions which are recessed in spot face and have very thin hex body; regular 1 1/8 inch sockets, with larger socket OD and inside chamber, will not properly remove valves; lightweight, 1/2 inch drive, deep well socket made of 12-gauge steel, capable of torques needed
- FT2345 Plate (16) required to remove pinion from V80F transaxle; pinion should not be driven out; plate provides way of mounting "H" bar or block to use forcing screw
- FT2344 Bearing Driver (17) used when installing 9S-7950 Differential Bearings; in addition to heating bearing, considerable force required to seat bearing against shoulder

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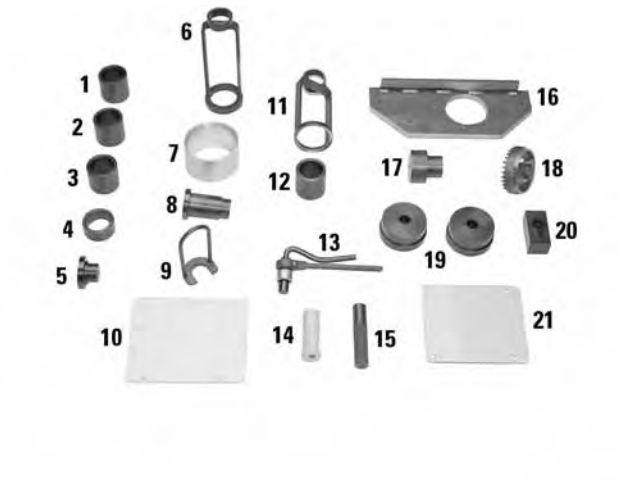
Countershaft Transmission Disassembly and Assembly Tooling (Continued)

SMCS Code: 3050-016, 3150-017
Model: 446, 910E, IT12B, IT14B; future product using Cat®'s countershaft transmission
Warranty: Six Months

- Spanner wrench (18) required to adjust, remove and install differential bearing retainers
- 4C-6400 Discs (19) and gauge block (20) used with 1P-0066 Pinion Depth Gauge Group to set pinion in relation to bevel gear; provide quick, accurate method of determining pinion shimming requirements during reassembly
- 1P-0531 Handle (15) used with 4C-6137 Bearing Installer (8), bearing installer (5), and FT2344 Bearing Driver (17); attaches to installers with a 1/4-20 hex head cap screw; handle included in 1P-0510 Driver Group or can be ordered separately
- 4C-6402 Expander Tool Group (13) required to install plugs in end of countershaft transmission shafts; plugs not usually removed, but in extreme cases where oil port plugging has occurred or is suspected, they can be removed for cleaning and inspection; tool can service 8 to 12.5 mm (0.31 to 0.49 in) plugs and comes with operating and plug installation instructions; service parts below

Tool Usage by Model				
Item	Tool	Description	910E IT12B 446	IT14B
1	--	Spacer	X	
3	--	Spacer	X	
5	--	Bearing Installer	X	
10	FT2343	Plexi Cover	X	X
16	FT2345	Plate		
17	FT2344	Bearing Driver		
18	--	Spanner		
20	--	Gauge Block		
21	FT2342	Plexi Cover		



Tool Usage by Model				
Item	**Part Number**	**Description**	**910E, IT12B, 446**	**IT14B**
2	4C-6140	Spacer	X	--
4	4C-6146	Spacer	X	--
6	4C-3652	Compressor As - Clutch Spring	X	X
7	4C-6143	Clutch Piston Installer	X	X
8	4C-6137	Bearing Installer	X	X
9	4C-6136	Lifting Bracket	X	X
11	4C-6399	Compressor Assembly	--	X
12	4C-6142	Spacer	--	X
13	4C-6402	Expander Tool Group	X	X
14	4C-6172[1]	Socket 1 - 1/8	X	X

(Continued)

Countershaft Transmission Disassembly and Assembly Tooling (Continued)

SMCS Code: 3050-016, 3150-017
Model: 446, 910E, IT12B, IT14B; future product using Cat®'s countershaft transmission
Warranty: Six Months

Tool Usage by Model				
Item	**Part Number**	**Description**	**910E, IT12B, 446**	**IT14B**
15	1P-0531	Handle[2]	X	X
19	4C-6400	Discs	--	--

[1] Special for removal of solenoid valves on counter shaft transmission
[2] Part of 1P-0520 Driver Group

Service/Repair Parts for 4C-6402 Expander Tool Group

Item	Description
5	Spring

Item	Part No.	Description	Size
1	4C-6407	Set Screw	M4 x 0.7 x 4 length
2	1U-7560	Allen Wrench	2 mm
3	4C-6403	Jaws	8 -9 mm (0.31 - 0.35 in) plugs
4	4C-6404	Jaws	10 -12.5 (0.39 - 0.49 in) plugs
6	4C-6405	Pusher - Jaw (1)	--
7	4C-6406	Retainer - Spring	--

Challenger Bearing Tools

SMCS Code: 3030-015, 3030-016, 7051-029
Model: Challenger 35, 45, and 55 Agricultural Tractors
Warranty: Six Months

128-5041 Bearing Puller

- Used to remove bearings from shafts in clutch assembly (works on tapered or straight roller bearings)
- Used with two 5/8 - 18 threaded rods (puller legs) or jaw-type pullers
- Provides pulling contact to bearings inner race, unlike standard pullers which pull on outer race (prevents damage to bearing rollers and cage and allows undamaged bearings to be used again)
- Offset puller face allows removal of recessed bearing in clutch plate housing
- Heat-treated for added durability

128-5042 Bearing/Gear Puller

- Used to remove various press fit bearings and gears from transmission and power train components
- Used with two 5/8 - 18 threaded rods (puller legs) or jaw-type pullers
- Heat-treated for added durability

128-5043, 128-5044, 128-5045, and 128-5046 Bearing Drivers

- Used to assemble press fit bearing onto shaft (helps prevent damage that can occur when using other more traditional methods of bearing installation)
- Driver uses shaft as pilot (tool design prevents slipping and applies force to inner race, exactly where required)
- Provides adequate length to properly seat bearing without using additional spacers or other tooling
- Heat-treated for added durability

128-5047 Rotation Shaft

- Used to rotate the shaft when seating bearings and gears (inclined ends expand tools diameter as nut is tightened)
- Also used to rotate the shaft to remove backlash from a gear train
- Provides a method of raising and lowering the shaft to check and adjust endplay
- Heat-treated for added durability

128-5048 Indicator Base

- Used as an indicator base for measuring shaft end play (sits in counterbore around shaft)
- Used with 128-5047 Rotation Shaft, 3P-1565 Collet, 369-2607 Indicator, 5P-4162 Point, and 6V-2030 Extension

128-5049 Guide Stud

- Used to guide frame rails while separating and joining transmission housing (two required)

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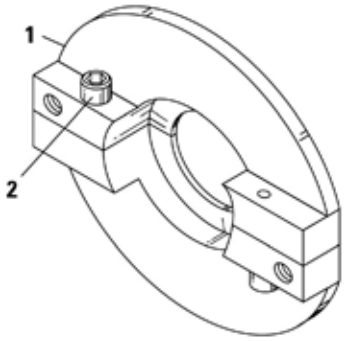
Challenger Bearing Tools (Continued)

SMCS Code: 3030-015, 3030-016, 7051-029
Model: Challenger 35, 45, and 55 Agricultural Tractors
Warranty: Six Months

- Installs into M20 x 2.5 threaded holes in transmission housing
- Wrench flats provide easy installation and removal
- Heat-treated for added durability

References

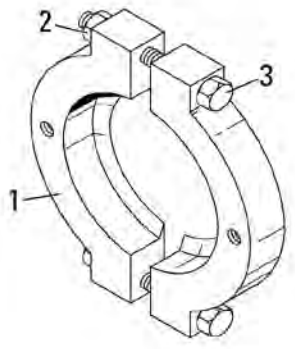
SENR8305, Service Manual, Challenger 35, 45, and 55 Agricultural Tractor Transmission Disassembly and Assembly
SENR8308, Service Manual, Challenger 35, 45, and 55 Agricultural TractorPower Train Disassembly and Assembly



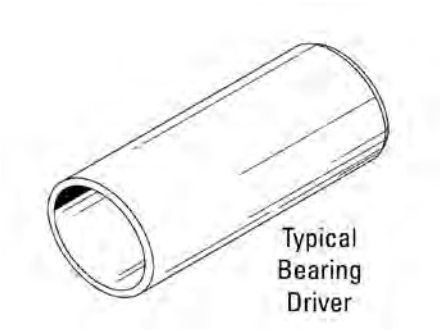
Item	Part No.	Description	Size	Puller Holes	Overall Diameter
1	128-5041	Bearing Puller	--	5/8 - 18	200 mm (7.9 in)
2	5S-2586	Bolt - Hex Socket Head	3/8 - 16 x 44.5 mm (1.75 in)	--	--

Bearing Parts

Item	Part Number	Description	Size
1	128-5042	Bearing/Gear Puller	--
2	6V-8188	Nut - Full	1/2-13
3	8S-9089	Hex Head Bolt	1/2 - 13 x 114 mm (4.5 in)

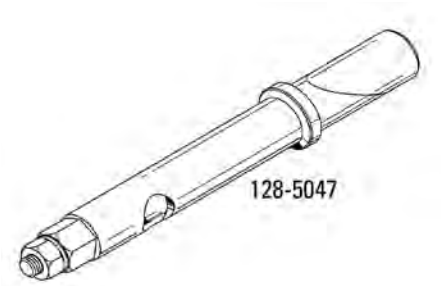


Bearing Drivers



Bearing Drivers	Inside Diameter
128-5043	55.6 mm (2.19 in)
128-5044	55.6 mm (2.19 in)
128-5045	50.7 mm (2.00 in)
128-5046	45.7 mm (1.80 in)

128-5047 Rotation Shaft

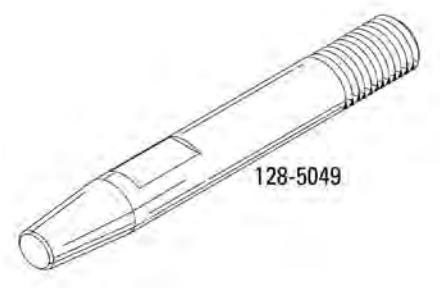


Part Number	Description	Min. Hole Diameter to Insert Shaft	Overall Length
128-5047	Rotation Shaft	40.5 mm (1.60 in)	311.2 mm (12.25 in)

128-5048 Indicator Base

Part Number	Description	Inside Diameter	Threaded Hole
128-5048	Indicator Base	44.45 mm (1.75 in)	3/8 - 32

128-5049 Guide Stud



Part Number	Description	Thread	Overall Length	Wrench Flat
128-5049	Guide Stud	M20 x 2.5	152 mm (6.0 in)	5/8 in

Compressing Tubes and Clutch Aligning Tools

SMCS Code: 3404-017
Model: IT28F Integrated Toolcarriers; 928F and 938F Wheel Loaders; 520C and 522C Skidders
Warranty: Six Months

- Used to disassemble and assemble clutches in countershaft transmissions — provides simplest, most effective method
- Improper assembly or damage to components can result from not using these tools
- Makes assembly less difficult — saves time and money

9U-7479 and 9U-7480 Compressing Tubes

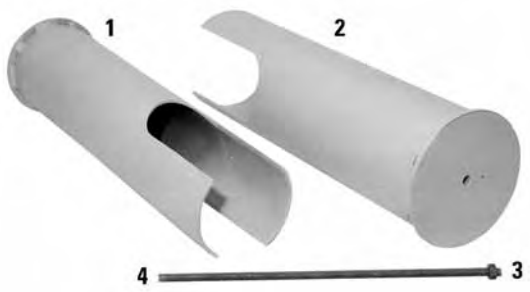
- 9U-7479 used for 190.0 mm (7.48 in) diameter first gear clutch; 9U-7480 used for other five 160.0 mm (6.30 in) diameter speed and directional clutches
- Compresses clutch spring to allow removal of retaining ring
- Compressing force produced by threaded rod extending through tube and into clutch shaft (eliminates need for arbor press)
- Large access windows in tube provide ample room to remove retaining ring

9U-7482 and 9U-7491 Clutch Aligning Tools

- 9U-7491 used for 190.0 mm (7.48 in) diameter first gear clutch; 9U-7482 used for other five 160.0 mm (6.30 in) diameter speed and directional clutches
- Used to quickly and properly align and center clutch friction discs and plates during assembly
- Extremely difficult to align plates and discs — tool greatly decreases time to assemble

References

SENR5995, Service Manual; 928F Wheel Loader Power Train Disassembly and Assembly
SENR5976, Service Manual; IT28F Integrated Toolcarrier Power Train Disassembly and Assembly



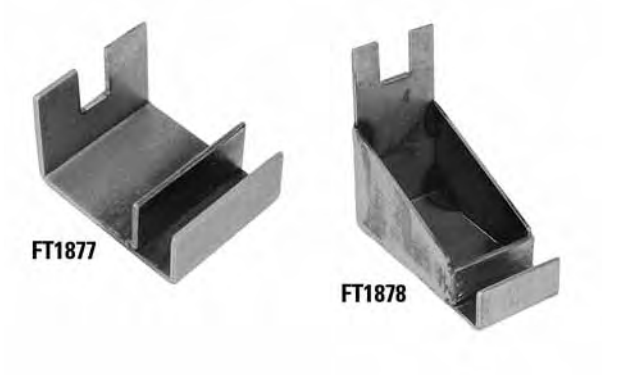
Item	Part No.	Description	Detail	Inside Diameter	Wall Thickness	Overall Length	Access Windows	Bolt Clearance Hole
1	5P-7970	Nut	M8 x 1.25	--	--	--	--	--
1	9U-7480	Compressing Tube	--	101.6 mm (4 in)	3.20 mm (0.13 in)	425 mm (16.75 in)	76 x 120 mm (3.0 x 4.8 in)	9.5 mm (0.38 in); 1 end
2	1U-6341	Rod - THD	(modified), M8 x 1.25 cut to 305 mm (12.0 in) long	--	--	--	--	--
2	9U-7479	Compressing Tube	--	120.6 mm (4.75 in)	320 mm (12.60 in)	425 mm (16.75 in)	76 x 120 mm (3.0 x 4.8 in) (2)	9.5 mm (0.38 in)

Clutch Aligning Tools

Item	Part No.	Description	Inside Diameter	External Spline	Overall Length
5	9U-7491	Clutch Aligning Tool	79 mm (3.11 in)	mating spline for 6Y-7932 Friction Disc and 6Y-5632 Clutch Plate	126.5 mm (5 in)
6	9U-7482	Clutch Aligning Tool	65 mm (2.56 in)	mating spline for 6Y-7922 Friction Disc and 6Y-8512 Clutch Plate	112.5 mm (4.4 in)

Clutch Retaining Clips

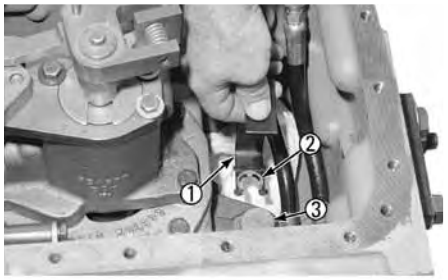
SMCS Code: 3050-016, 3150-017
Model: 657E, 769C, 773B, 777B
Warranty: None



- Used to hold discs and plates in position and in alignment with hub spline on 7- and 8-speed transmissions
- FT1877 Clips used on 769C, 773B, and 777B seven-speed transmissions
- FT1878 Clips used on 657E eight-speed transmissions
- When assembling number seven clutches on 7- and 8-speed transmissions, top clutch plates and discs are above hub spline; this causes alignment problems when lowering clutch cover onto stack; clips (3 required) fit over transmission body flange and top plate

1U-5752 Retainer Tool

SMCS Code: 32205-010
Model: 943, 953, 963, 973 Track-Type Loaders
Warranty: Six Months



- Aids in removal and installation of servo piston retaining ring found in hydrostatic transmissions
- Retaining ring virtually inaccessible to pliers, screwdrivers or any other hand tool; attempting removal or installation without this special tool risks dropping retaining ring inside transmission where retrieval could require extensive disassembly and extend repair time by one hour or more
- To remove or install the retaining ring on the pin, the ring must be nested between the tangs on the 1U-5752 exactly as shown
- For installation, slide the inner tangs of the 1U-5752 through the pin ring groove to guide the ring into place

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1U-5752 Retainer Tool (Continued)

SMCS Code: 32205-010
Model: 943, 953, 963, 973 Track-Type Loaders
Warranty: Six Months

- For ring removal, the tangs must also pass through the pin groove while forcing the ring out of the groove
- Apply an upward force against the bottom pin boss with the 1U-5752 to keep the ring captured between the tool and boss during both installation and removal

Item	Description
2	Retaining Ring
3	Servo Piston Pin

Item	Part Number	Description
1	1U-5752	Retainer Tool

4C-8156 Lifting Fixture
4C-8157 Fixture

SMCS Code: 3400-017
Model: All H Series Motor Grader Models, Except 14H and 16H
Warranty: Six Month

- Used to disassemble and assemble countershaft transmission (all three tools are required for transmission shaft/clutch assemblies)
- Using proper tooling to assemble and disassemble shaft/clutch assemblies and seal carriers will reduce component damage and make both procedures easier and faster

4C-8156 Lifting Fixture

- Used to remove and install number four (first/third) shaft assemblies (both shaft/clutch assemblies must be removed together)
- Lifting fixture can also be used to remove number five output shaft
- Fixture bolts to top of each shaft assembly
- Eyebolt provides an attachment point for overhead hoist
- Designed to reduce component damage and make a formerly difficult procedure, much simpler

4C-8157 Fixture

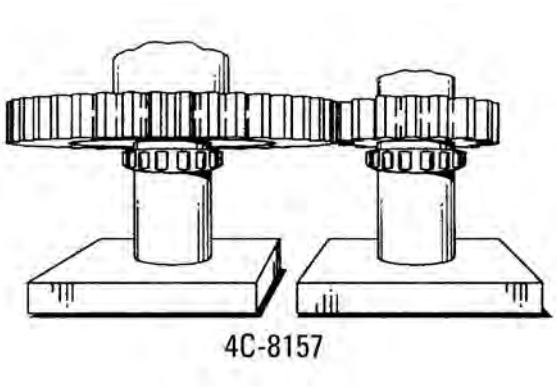
- Used to hold shaft/clutch assemblies after being removed from transmission housing (2 required)
- Designed to provide a stable base during disassembly of shaft/clutch assembly
- Fixtures are separate and permit shaft/clutch assemblies to be separated (enables individual shaft clutch servicing)

Reference

Service Manual Module

Part No.	Description	Overall Size	Lifting Capacity	Eye Bolt (metric)
4C-8156	Fixture - Lifting	300 x 51 x 54 mm (11.8 x 2.0 x 2.1 in)	227 kg (500 lb)	4C-8359

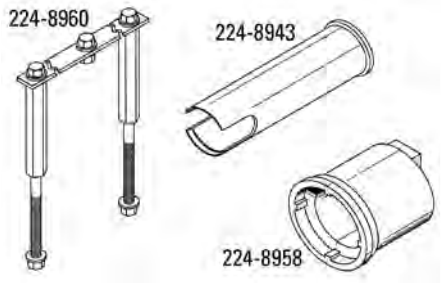
4C-8157 Fixture



Part No.	Description	Overall Size	Inside Diameter of Support Shaft
4C-8157	Fixture	203 x 203 x 127 mm (8.0 x 8.0 x 5.0 in)	63.5 mm (2.5 in)

Ag Tractor Transmission and Final Drive Tools

Model: MT835, MT845, MT855, and MT865 Ag Tractors
Warranty: Six Months



Part No.	Description	Use
224-8943	Spring Compressor Assembly	Correctly remove and install transmission clutch shaft spring retainers
224-8958	Spanner Wrench	Remove and install discontinued 179-9478 Locknut on all final drives
224-8960	Torque Bar Group	Check and set rolling torque of final drive assembly

6V-4050 Shift Analyzer
Discontinued — Service Parts Available

- Discontinued and replaced by 1U-7446 Transmission Shift Analyzer Group

Reference
SEHS7918, Special Instructions

Item	Description
2	SEES5662 Title Decal
3	SEES5563 Instruction Decal
5	Liner
8	Switch Test Adapter

Item	Part Number[1]	Description
1	6V-7145	Case
6	5P-7366	Cable Assembly - Power
7	6V-4823	Cable Assembly
Item 4, Shift Analyzer Consists:		
4	6V-3073	Case - Plastic
4	8D-8113	Fuse

[1] All part numbers in the table have a six monthwarranty

FT2233 Transmission Control Valve Support

SMCS Code: 3205-010
Model: H and L Series Track-Type Tractors
Warranty: None

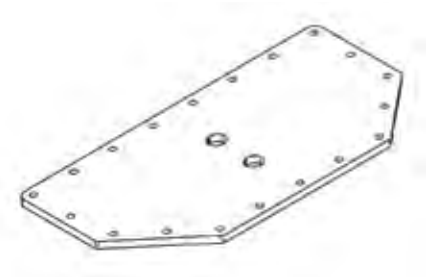
- Removal and installation of control valve on H and L Series Track-Type Tractors can be difficult with transmission in-chassis; FT2233 Transmission Valve Support makes this operation easier by providing a platform to slide control valve onto when removing it from transmission
- Once control valve is on FT2233, it can be easily lifted away from tractor
- For installation, control valve can be lifted onto FT2233 and slid back into position inside transmission
- Support bolts to bottom of transmission cover opening; guide bar aligns control valve in position for installation and adjusts to accommodate smaller D4H and D5H control valves; angle irons stiffen plate and prevent control valve from sliding off support

125-4633 Plate

SMCS Code: 3150-010, 0635
Model: D9R and D10N Track-Type Tractor
Warranty: Six Months

Part Number	Description
125-4633	Plate

- Used to remove transmission assembly from machine without draining hydraulic system on ripper attachment
- Used with 142-6893 Hook Assembly
- Tool is NOT used to remove bevel gears and case from main frame case
- Plate height x width: 283.0 x 508.0 mm (11.1 x 20.0 in)
- Plate thickness: 9.5 mm (0.38 in)



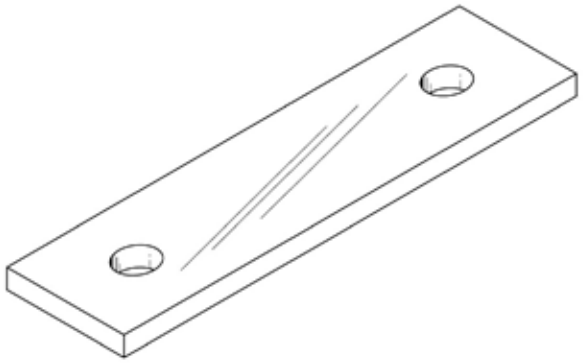
FT2973 Holding Plate
Essential Tool

SMCS Code: 3258-017
Model: D6N Track-Type Tractor
Warranty: None

- Used to hold transmission bevel gear and transfer gear in position while checking backlash
- Bolts to top of transmission case and bevel gear assembly using existing bolts
- Material: 1045M Steel

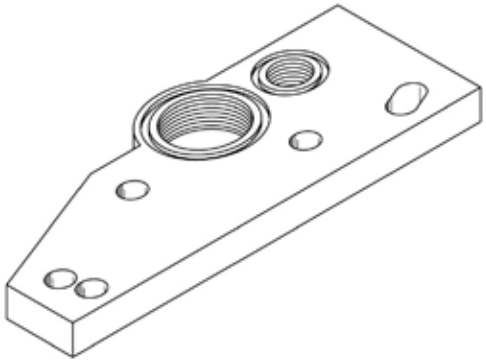
Reference

RENR5257, Service Manual, Disassembly and Assembly Power Train, D6N Track-type Tractor



FT0928 Plate Adapter

SMCS Code: 3000-036
Model: 631E and 637E Scraper
Warranty: None



- Modifications to existing FT0928 Plate Adapter enable it to be used as oil inlet and outlet adapter plate while bench testing 631E and 637E Scraper transmissions
- Modification does not affect its current use while bench testing 631D, 633D, 637D, 639D and 657B Scraper transmissions
- Modification consists of drilling one new hole and elongating an existing hole

Tools to Support and Connect Transmissions to Hydraulic Test Center

SMCS Code: 3150-036, 0783
Model: 508 Skidder
Warranty: Six Months

- Used to support and connect transmissions to hydraulic test center (provides simple, effective means of support)
- Used with 1U-5999 Spindle and large hydraulic test center

Reference

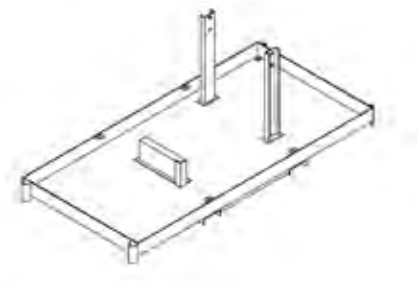
NEHT6033, Test Procedure

Also Included:
Front Support

Part Number	Description
4C-6174	Adapter Ring
4C-6176	Rear Support
4C-6177	Pilot Bushing

296-3645 Pan Support Group

SMCS Code: 3000 -036
Model: CX31 On-Highway Transmissions
Warranty: Six Months



- Used to locate and support CX31 On-Highway Transmission on hydraulic test center during bench testing procedure
- Fastens to hydraulic test center work sump
- Steel pan collects (isolates) transmission fluid to prevent contamination of test center oil
- Integral drain plug for easy fluid removal after testing is complete
- Also used with optional 325-9486 Bracket Assembly for bench testing CX28 On-Highway Transmissions

Reference

REHS3184, Bench Test Procedure

Part Number	Description
296-3645	Pan Support Group

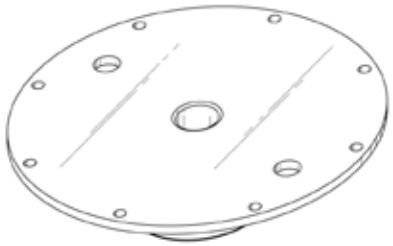
289-0219 Drive Adapter

SMCS Code: 3000-036
Model: CX31 On-Highway Transmissions
Warranty: Six Months

- Used for connecting CX31 On-Highway Transmission to Hydraulic Test Center
- Used with 4C-4701 Spindle Assembly Adapter, 1U-5999 Spindle Assembly, 1U-6721 Adapter, 1U-9359 Drive Adapter, and 1U-9131 Drive Adapter to connect CX31 Transmission to test center driveshaft
- Replaces flywheel during bench testing

Reference

REHS3184, Bench Test Procedure



Part Number	Description
289-0219	Drive Adapter

327-9235 Lip Seal Installer Assembly

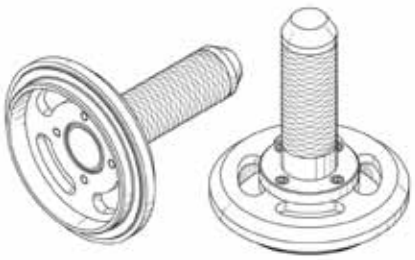
Essential Tool

SMCS Code: 3101-012, 3105-012
Model: CX31 and CX35 Transmission
Warranty: Six Months

- Used to properly install 270-1705 Lip Seal in torque converter housing
- Used with 1P-0520 Driver Group
- Ensures accurate installation depth each time
- Heat-treated for added durability

References

KENR5091, CX31 On-Highway Transmission, Disassembly and Assembly, Torque Converter Housing - Install
KENR6060, CX35 On-Highway Transmission, Disassembly and Assembly, Torque Converter Housing - Install



Part Number	Description
327-9235	Lip Seal Installer Assembly

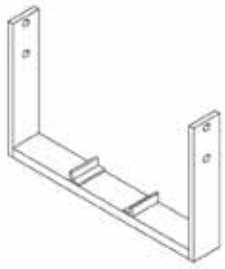
325-9486 Bracket Assembly

SMCS Code: 3000-036
Model: CX28 On-Highway Transmissions
Warranty: Six Months

- Used to locate and support CX28 On-Highway Transmission during bench testing on Hydraulic Test Center
- Used with 296-3645 Pan Support Group on hydraulic test center work sump
- Welded steel construction

Reference

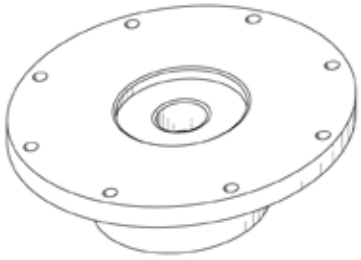
REHS3485, Bench Test Procedure



Part Number	Description
325-9486	Bracket Assembly

325-9487 Drive Adapter

SMCS Code: 3000-036
Model: CX28 On-Highway Transmissions
Warranty: Six Months



- Used to connect CX28 Transmission to Hydraulic Test Center driveshaft for bench testing CX28 On-Highway Transmission
- Used with eight 8T-4186 Bolts and 8T-4121 Washers (dealer supplied)
- Replaces flywheel during bench testing

Reference
REHS3485, Bench Test Procedure

Part Number	Description
325-9487	Drive Adapter

Bench Testing D9N and D10N Transmissions

SMCS Code: 3000-036
Model: D9N (discontinued arrangement 7W-7667) and D10N (arrangement 7T-5802) Transmissions
Warranty: Six Months

- Required for bench testing D9N (discontinued arrangement 7W-7667) and D10N (arrangement 7T-5802) Transmissions
- Adapters and support legs provide way to connect transmission to test bench oil supply, flowmeters and drive shaft, in addition to supporting transmission during bench test

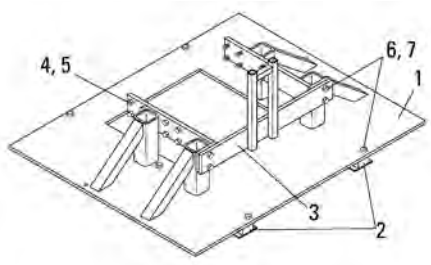
Reference
NEHT6016, Test Procedure

Part Number	Description
FT2278	Swivel Head
FT2277	Swivel Support
FT2276	Front Support

Part Number	Description
1U-9885	Adapter Block

312-4124 Stand Group

SMCS Code: 3000-036
Model: 994D (153-7520 Transmission Arrangement) and 994F (239-8137 Transmission Arrangement)
Warranty: Six Months



- Used to support 153-7520 and 239-8137 Transmission Arrangements on Hydraulic Test Center during bench test
- Fastens securely to test center work sump using dealer supplied hardware
- Includes hardware required to secure transmission to stand
- Welded steel construction

Reference
REHS3490, Bench Test Procedure

Item	Description	Qty.
1	Base Assembly[1]	1
2	Rail Assembly[1]	2
3	Support Assembly[1]	1
[1]Not serviced separately		

(Continued)

312-4124 Stand Group (Continued)

SMCS Code: 3000-036
Model: 994D (153-7520 Transmission Arrangement) and 994F (239-8137 Transmission Arrangement)
Warranty: Six Months

Item	Part No.	Description	Size	Qty.
4	6V-5845	Transmission Mounting Bolt	M20 x 2.50 x 70 mm long	16
5	8T-3282	Washer	M20	16
6	1A-8063	Bolt	3/4-10 x 2.50 inches long	10
7	5P-8248	Hard Washer	3/4 inch	10

311-2918 Drive Adapter

SMCS Code: 3000-036
Model: 994D (124-5570) and 994F (180-0567) Torque Convertor
Warranty: Six Months

- Used to bench test 994D (124-5570) and 994F (180-0567) Torque Convertors on Hydraulic Test Center
- Used with 294-0308 Test Fixture and 1U-5999 Spindle Group to connect torque convertor to test center driveshaft
- Replaces flywheel pilot during bench testing
- Durable, welded steel construction

Reference
REHS3453, Bench Test Procedures

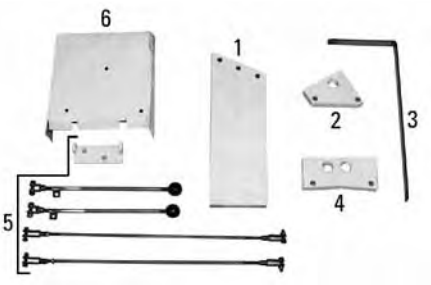
Part Number	Description
311-2918	Drive Adapter

Bench Testing D4H and D5H Transmissions

SMCS Code: 3000-036
Model: D4H (arrangement 3T-8315) and D5H (arrangement 3T-8274) Transmissions
Warranty: Six Months

- Required for bench testing D4H (arrangement 3T-8315) and D5H (arrangement 3T-8274) Transmissions
- Adapters, linkages and support legs provide way to connect transmission to hydraulic test center oil supply, flowmeters and drive shaft, in addition to supporting transmission during bench test

Reference
NEHT6017, Test Procedure



Item	Part Number	Description
3	FT2275	Bracket
5		Lever
6		Valve Shield

Item	Part Number	Description
1	1U-9768	Front Support
2	1U-9767	Lube Adapter Block
4	1U-9769	Adapter Block
5	1U-9830	Shift Lever Kit
5	5T-8097	Lever

Tools to Support Transmission During Bench Testing

SMCS Code: 3000-036
Model: See Model Usage Below
Warranty: Six Months

- Used to support tranmissions during bench testing
- Used with Cat® 1U-9400 and 9U-5000
- Can be used to store and transport transmissions with lift trucks
- 4C-9998 used with the following Crossmember Assemblies (sold separately)
  9U-6001 - 985C
  9U-6002 - 980C
  1U-6232 - 910E, 910F, 918F, 924F, IT12E, IT12F, IT14B, IT14F, IT18F, IT24F
  1U-9035 - 928F, 938F, 938G, IT28F, IT38F, IT38G
  127-8477 - CH45
  136-6575 - D250E, D300E
  141-9992 - D400E
  159-0747 - 980C, 988B, 824C, 825C, 826C, 834B, 836B, 24H

Requires two each of the 4C-9998 Bracket Assembly, one each of the above listed Crossmember Assemblies, and the following hardware (sold separately):
7F-5227 Bolt (4 pcs)
1D-4616 Bolt (4 pcs)
2S-0115 Washer (12 pcs)
2J-3506 Nut (4 pcs)

References for Tools to Support Transmission During Bench Testing

REH2298 Bench Test Procedure

Part Number	Description
4C-9998	Bracket Assembly
Crossmember Assemblies	
127-8477	CH45
136-6575	D250E, D300E
141-9992	D400E
159-0747	980C, 988B, 824C, 825C, 826C, 834B, 836B, 24H
1U-6232	910E, 910F, 918F, 924F, IT12E, IT12F, IT14B, IT14F, IT18F, IT24F
1U-9035	928F, 938F, 938G, IT28F, IT38F, IT38G
9U-6001	950C
9U-6002	980C
Required Hardware	
1D-4616	Bolt (4 pcs)
2J-3506	Nut (4 pcs)
2S-0115	Washer (12 pcs)
7F-5227	Bolt (4 pcs)

Service Tools for Countershaft Transmission

Warranty: Six Months

- FTs used for servicing countershaft transmission
- 1U-8306 Spanner Wrench Assembly used to remove and install nut on winch pinion shaft and input clutch shaft
- Essential for efficient service support of 508 Skidders; disassembly and assembly of transmission and winch much more difficult and time consuming without these tools

(Continued)

Service Tools for Countershaft Transmission (Continued)

Warranty: Six Months

- 4C-3652 or FT1744 Clutch Spring Compressor Assembly is required for the disassembly and assembly of the 508 transmission. Even though the FT1744 is not a new tool, it has been changed. A socket has been added to the compressor as shown. The socket was added to insure retention of the shop press ram on the compressor. The SENR3366 Power Train Disassembly and Assembly Manual shows the updated compressor being used. All spring compressors in dealers shops should be updated according to print FT1744.

References

SENR3360, Service Manual, Vehicle System Disassembly and Assembly
SENR3366, Service Manual, Power Train Disassembly and Assembly

Item	Part Number	Description	Use
1	FT2219	Bearing Driver Assembly	installation of bearings into transmission 3rd speed clutch gear
2	FT2221	Support Stand Assembly	supports clutch pack assemblies when they are removed from transmission case
3	FT2234	Spacer Bar	positions transmission clutch gears for installation of bearings (2 bars required)

1U-8306 Pinion Nut Spanner Wrench

Part Number	Description	Use
1U-8306	Pinion Nut Spanner Wrench	Removal and Installation of nut on winch pinion shaft and input clutch shaft

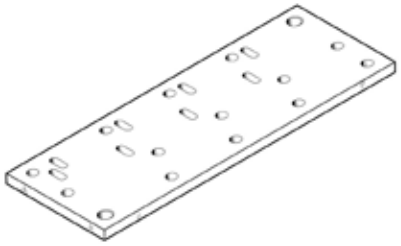
4C-3652 Compressor As - Clutch Spring
FT1744

Part Number	Description
FT1744	Drawing

Part Number	Description
4C-3652	Compressor As - Clutch Spring

139-7050 Cover Plate

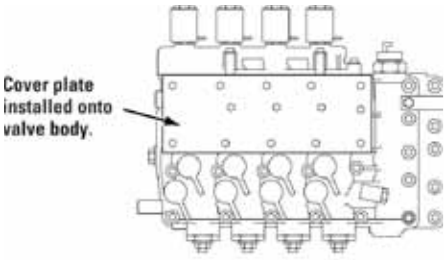
SMCS Code: 3412-032, 3150-025
Model: All H Series Motor Graders
Warranty: Six Months



- Enables mechanic to check and adjust initial transmission pressures
- Reduces time required to perform initial pressure adjustment as removal of control valve is not recommended or necessary
- Must be installed on transmission valve group in place of existing 8E-9474 Cover prior to initial pressure test — initial pressures cannot be tested properly without installing cover plate
- Procedure to use cover plate: (1) Remove bolts from control valve cover, EXCEPT for 3 bolts across top; (2) Loosen 3 top bolts only enough to lift cover and slide cover plate into place; (3) Tighten bolts as recommended, and then follow normal adjustment procedure as outlined in Service Manual
- Machined with oil porting slots on bottom side of plate that properly direct oil to appropriate locations in valve body
- Uses bolts from 8E-9474 Cover to retain plate onto valve body
- Overall size: 108.0 x 286.0 x 7.0 mm (42.5 x 11.3 x 0.3 in)

Reference for 139-7050 Cover Plate

Service Manual Module



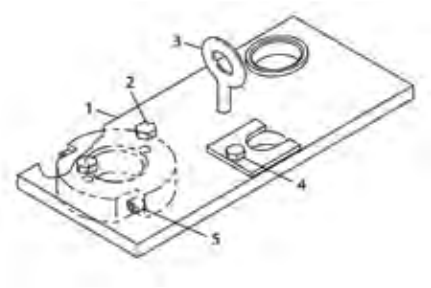
Part Number	Description
139-7050	Cover Plate

152-7085 Transmission Shaft Handler Base Assembly
Essential Tool

SMCS Code: 3063-010
Model: All Backhoe Loader Models with Power Shift Transmission (except 446B)
Warranty: Six Months

European Union compliant, CE marked

- Used to correctly and safely remove and install power shift transmission shafts
- Provides simultaneous handling of three transmission shafts
- Used to remove and reinstall shafts, gears, and bearings as an assembly



Item	Part No.	Description	Size
1	152-7085	Transmission Shaft Handler Base Assembly	--
2	0S-1588	Bolt	3/8 - 16
3	1P-7407	Eyebolt (1/2 - 13)	1/2 - 13
4	8T-9364	Bolt	1/4 - 20
5	1T-0284	Hex Socket Bolt	5/16 - 18

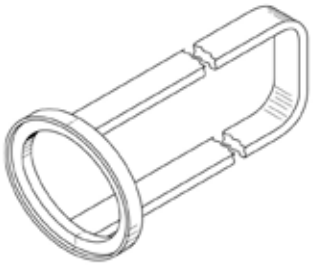
207-8153 Transmission Clutch Spring Compressor

Model: All Models MT700 Series GEN 111 Ag Tractors
Warranty: Six Months

Part Number	Description
207-8153	Transmission Clutch Spring Compressor

- Used to remove clutch spring on the transmission shaft assembly

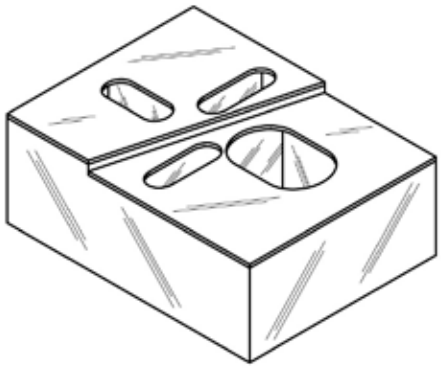
Reference
RENR1867, MT700 Disassembly and Assembly Service Manual



FT2769 Assembly Table

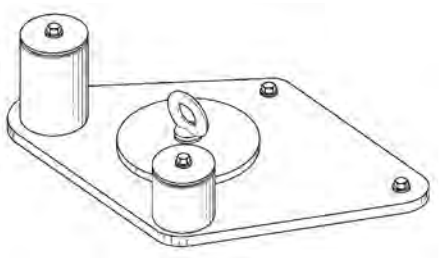
Model: All MT700 and MT800 Series GEN 111 Ag Tractors
Warranty: None

- Used to disassemble and assemble transmission shaft assemblies
- Holds transmission in correct, upright position
- Material: SAE1018 Steel



203-5581 Lifting Bracket Assembly

SMCS Code: 3400-017
Model: MT700 Series GEN 111 Tractors
Warranty: Six Months



European Union compliant, CE marked

- Used to efficiently remove and install MT700 transmission shaft assemblies from transmission case
- Holds all four shaft assemblies in alignment
- Designed to vertically balance shaft assemblies for easier installation

Reference

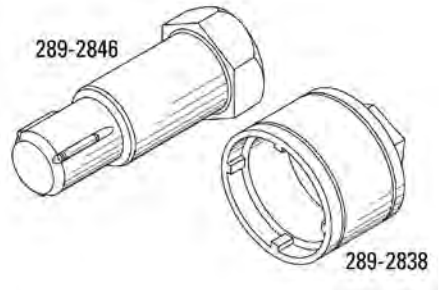
NEHS0991, 203-5581 or 203-5582 Lifting Bracket Assembly

Maximum load	356 kg (784 lb)

Service/Repair Parts		
Part Number	**Description**	**Size**
4C-8359	Metric Eyebolt	M12 x 1.75
6V-1820	Bolt	M10 x 1.5
6V-5839	Washer	M10

CX31 On-Highway Truck Transmission Pump Tooling Essential Tool

SMCS Code: 3400-017
Model: CX-31 OEM On-Highway Truck Transmission
Warranty: Six Months



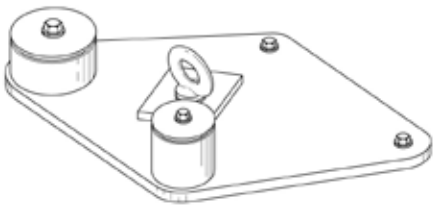
Reference

KENR5091, On-Highway OEM Disassemble and Assemble Manual

Part No.	Description	Use
289-2838	Spanner Wrench Assembly	Remove and install auxiliary pump drive gear
289-2846	Rotating Adapter Assembly	Measure proper rolling torque during assembly

203-5582 Lifting Bracket Assembly

SMCS Code: 3400-017
Model: MT800 Series Ag Tractors
Warranty: Six Months



European Union compliant, CE marked

- Used to correctly install and remove MT800 transmission shaft assemblies from transmission case
- Used with an overhead lifting device
- Removes all four shaft assemblies at 1 time (makes installation and removal much faster and easier)

Reference

NEHS0991, 203-5581 or 203-5582 Lifting Bracket Assembly

Maximum load	535 kg (1179 lb)

(Continued)

203-5582 Lifting Bracket Assembly (Continued)

SMCS Code: 3400-017
Model: MT800 Series Ag Tractors
Warranty: Six Months

Service/Repair Parts		
Part Number	**Description**	**Size**
Service/Repair Parts		
3E-3880	Eyebolt	M20 x 2.5
6V-1820	Bolt	M10 x 1.5
6V-5839	Washer	M10

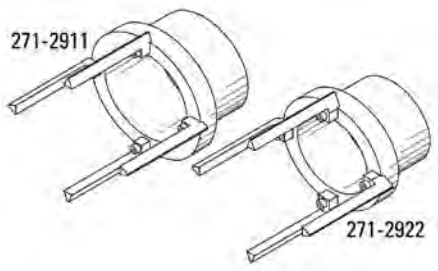
271-2911 Alignment Group, 271-2922 Alignment Group

Essential Tool

SMCS Code: 3030-106, 3054-024
Model: 14M and 16M Motor Graders with Monarch transmissions
Warranty: None

Part Number	Description
271-2922	Alignment Group
271-2911	Alignment Group

- Used to properly align friction discs in transmission
- Allows for easy and accurate disassembly and assembly of transmission friction disc packs
- Service/Repair Part: 191-8921 M6 Socket Head Bolt

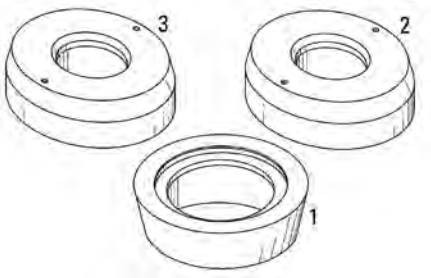


Clutch Piston Installation Sleeves

Essential Tool

SMCS Code: 3010
Model: See Below
Warranty: None

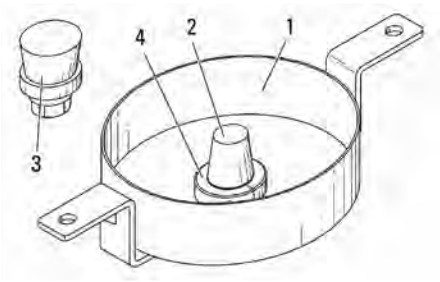
- Used for proper assembly of 3P-2768, 3P-2792, and 1P-9261 Clutch Pistons into various transmissions
- Heat-treated for added durability



Item	Part No.	Description	Model
1	305-3013	Piston Installation Sleeve	24H, 24M Motor Grader; 824G, 824G Series II, 824H Wheel Dozers; 825G, 825G Series II, 825H, 826G, 826G Series II, 826H Wheel Compactors; 980G, 980G Series II, 980H, 988G, 988H Wheel Loaders: R2900 and AD30 Mine Trucks
2	306-4092	Sleeve	D9R and D9T Track-Type Tractors
3	306-4093	Sleeve	D10R and D10T Track-Type Tractors

326-8026 Cover Assembly
Essential Tool

SMCS Code: 3030
Model: M-Series Motor Grader
Warranty: Six Months



- Used to hold drive shaft yoke in place during transmission test procedure
- Rubber bumper presses against yoke to prevent it from being dislodged and prevent oil leakage around yoke seal
- Ball bearing assembly allows bumper to rotate with yoke during testing
- Removable collar allows changing bumper assemblies to fit various transmission arrangements
- Attaches to transmission cover plate using existing bolt holes

References

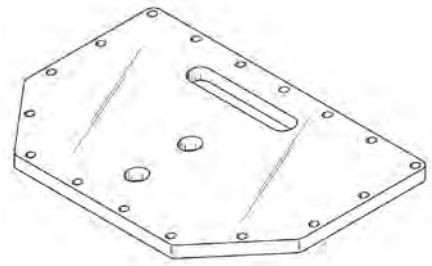
RENR8454, 120M, 12M, 140M, and 160M Motor Grader Power Train
RENR8482, 14M and 16M Motor Grader Power Train

Item	Description
1	Plate Assembly
2	Bumper Assembly, 50.8 mm (2.00 in) long tapered bumper
	Used with 253-8405 and 331-5225 Transmission Arrangement
3	Bumper Assembly, 25.4 mm (1.00 in) long tapered bumper
	Used with 253-8407 Transmission Arrangement
4	Collar Assembly

Part Number	Description
326-8026	Cover Assembly

369-6017 Lifting Plate

SMCS Code: 3064-010
D6R and D7R Track-Type Tractor
Warranty: Six Months



European Union compliant, CE marked

- Used to remove and install 207-2375 Transmission
- Used with 142-1664 Adjustable Lifting Bracket Group
- Attaches to lifting bracket with two user supplied bolts
- Heat-treated for added durability

Reference

NEHS1117, Tool Operating Manual

Working Load Limit	907 kg (2000 lb)
Overall size	28 x 46 cm (11 x 18 in)
Weight	16 kg (37 lb)

Part Number	Description
369-6017	Lifting Plate

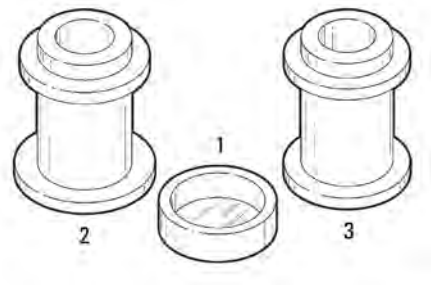
370-2238 Seal Driver Kit

SMCS Code: 3030-012
Model Usage: CX28 Transmission for Combat and Tactical Vehicles
Warranty: Six Months

- Used to install seals in transmission
- Material: nylon

Reference

KENR5098 Power Train Disassemble & Assembly



Item	Overall Size	Diameter (Seal Surface)	Weight
1	111.25 (4.382 in) dia, x 32.5 mm (1.28 in) thick	92.58 mm (3.64 in)	0.76 kg (1.66 lb)
2	120.7 mm (4.72 in) dia, x 152.4 mm (6.0 in) long	88.9 mm (3.5 in)	0.2 kg (0.44 lb)
3	120.7 mm (4.72 in) dia, x 152.4 mm (6.0 in) long	90.08 mm (3.63 in)	0.86 kg (1.90 lb)

Part Number	Description
370-2238	Seal Driver Kit

Transmission Assembly Tools

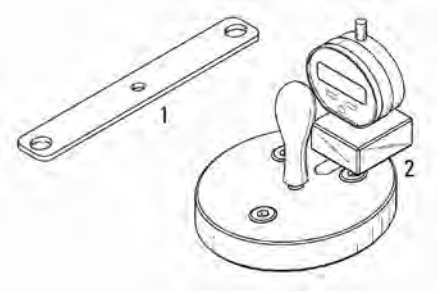
Essential Tool

SMCS Code: 3030-016
Model Usage: AD55B Underground Articulated Truck
Warranty: None

- Used to make transmission measurements during assembly procedure

Reference

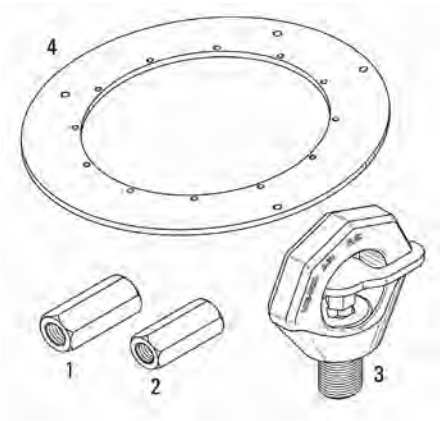
KENR6708, Drive Shaft (Upper) - Remove and Install
KENR6708, Input Drive from Transmission - Separate/Connect
KENR6708, Input Drive - Disassemble/Assemble 351-2833, Bearing Adjustment Instructions



FT3174 Bracket (Item 1)	
Length	205 mm (8.0 in)
Width	25.4 mm (1.0 in)
Thickness	3.175 mm (0.125 in)
Weight	0.12 kg (0.26 lb)
Use	Measures rolling torque of transmission
FT3175 Measuring Fixture Assembly (Item 2)	
Outside diameter	139.7 mm (5.5 in)
Height	140.2 mm (5.5 in)
Weight	3.5 kg (7.7 lb)
Use	Measures distance between end of output yoke and bearing

Transmission Disassembly and Assembly Tools

SMCS Code: 3030-017
Model Usage: CVT 145 Transmission
Warranty: Six months



Used to disassemble and assemble transmission components

368-8610 and 368-8611 Coupler Nuts

- Used to lift transmission gear sets
- 368-8611 is a 21 mm hex coupling with an M16 x 2 internal thread
- 368-8610 is a 25 mm hex coupling with an M20 x 2.5 internal thread

Item	Part Number	Description
1	368-8610	Coupler Nut
2	368-8611	Coupler Nut
3	369-5916	Lifting Eyebolt Assembly
4	370-0551	Ring Adapter

369-5916 Lifting Eyebolt Assembly

- Used to lift components with an M20 x 2.5 threaded lifting hole
- Eyebolt is European Union compliant, CE marked
- Eyebolt swivels to direction of pull preventing side loading during a lift
- Hex shaped locking key can be inserted into eyebolt to prevent swiveling, if necessary
- Requires an M12 Hex Bit to tighten eyebolt to 115 N·m (85 lb ft) torque (allows eyebolt to remain tightened to workpiece while still allowing it to swivel)

Working load limit	2.3 t (5070 lb) at a 90 degree lifting angle
Eye opening	40 mm (1.57 in)

370-0551 Ring Adapter

- Used to mount transmission onto repair stand
- Used with 1P-2420 Transmission Repair Stand

Outside diameter	66 cm (30 in)
Inside diameter	44 cm (17.75 in)
Thickness	1.2 cm (0.5 in)

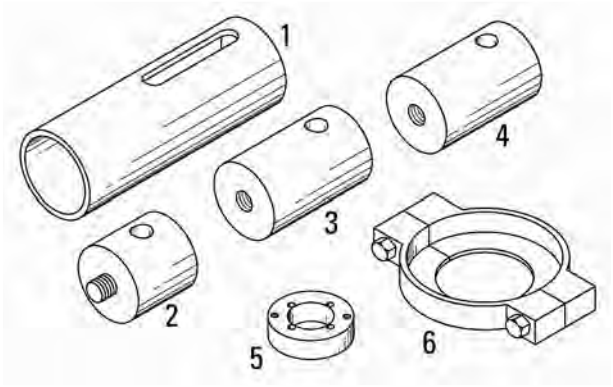
Steering Clutch and Brake

Hydraulic Service Tool Attachments

SMCS Code: 4005-010
Model: See Below
Warranty: Six Months

- Used for steering clutch and brake operations on models of machines listed below

Item	Description	Use	Model
1	Adapter	Steering Clutch removal	D2 and 933



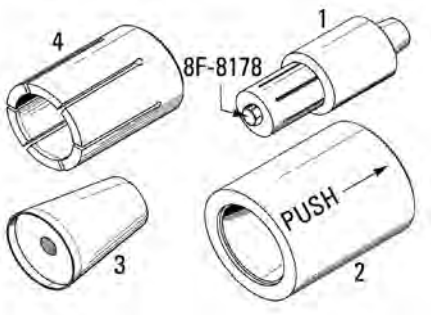
Item	Part No.	Description	Use	Model
2	8M-9008	Spacer	Steering Clutch Hub removal and installation	D6C, D7E
3	6V-3094	Adapter	Steering Clutch Hub installation	D7G
4	4C-9471	Adapter	Steering Clutch Hub installation	D6C
5	1M-6764	Puller	Steering Clutch Hub removal	D8H and 583H
6	8M-4857	Puller	Steering Clutch Hub removal	D9G and 594
7	8M-9011	Puller (1)	--	D6C, D7E, D7F, 571A, 572E

209-6381 Seal Installer Group

Essential Tool

SMCS Code: 4261
Model: 777, 785, 789, 793, and 797 Off-Highway Trucks
Warranty: Six Months

- Used to install two-piece seal assembly into 205-0561 Piston Assembly (part of slack adjuster)
- Used with 205-0567 Piston Kit (contains seals)
- Reduces chance of damage during seal and piston installation
- Made from durable nylon
- Three pieces can be assembled for easy storage using an 8F-8178 Bolt



Installation procedure

1. Place 207-3440 Loading Mandrel over small piston.
2. Place inner portion of two-piece seal onto mandrel and push onto piston using 207-3442 Ring Pusher. Repeat for outer portion of seal.
3. With both sets of seals installed, push piston assembly into 207-3444 Seal Sizer.
4. Allow seals to compress for one minute and then install small piston into large piston.

Reference

NEHS0844, Tool Operating Manual

(Continued)

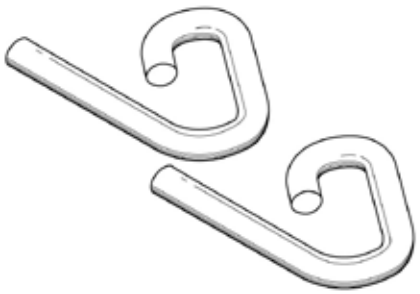
209-6381 Seal Installer Group (Continued)
Essential Tool

SMCS Code: 4261
Model: 777, 785, 789, 793, and 797 Off-Highway Trucks
Warranty: Six Months

Item	Part Number	Description
1	209-6381	Seal Installer Group
2	207-3444	Seal Sizer
3	207-3440	Loading Mandrel
4	207-3442	Ring Pusher

FT0526 Lifting Tool

SMCS Code: 4005-011
Model: 977 Traxcavator
Warranty: None



- Used to remove steering clutch assemblies (2 required)

Steering Clutch Stands

SMCS Code: 4101-016, 4101-017
Model: Most Cat® Models
Warranty: None

- Power-operated stand developed for disassembly and assembly of steering clutches
- Can be equipped for hydraulic or air actuation
- Capable of handling all current and non-current steering clutches
- Two special features of stand are inner and outer steering clutch disc aligners
- Prints and Bill of Material provide all information needed for fabricating either pneumatic or hydraulic versions in the dealer shop
- Pneumatic stand uses two 3D-2744 Rotochambers and 4D-3279 Control Valve, which together with necessary fittings and hoses make up power package
- Stand can be adapted to hydraulic operation by use of 76.2 x 457.2 mm (3.0 x 18.0 in) hydraulic cylinder and power source such as 3S-6224, 2P-5550 or new Pumps

(Continued)

Steering Clutch Stands (Continued)

SMCS Code: 4101-016, 4101-017
Model: Most Cat® Models
Warranty: None

NOTICE:
Steps must be taken for pressure relief of the hydraulic system to correspond to cylinder capacity. The above-mentioned power sources are 703 kg/cm²(10,000 PSI) units. The maximum system pressure required for a 76.2 mm (3.0 in) diameter cylinder in this application is 105 kg/cm²(1500 PSI).

Part Number	Description
FT0610	Steering Clutch Stand (Pneumatic)
FT0611	Air Lines
FT0612	Inner Aligner
FT0613	Steering Clutch Stand (Hydraulic)

Compressor Plates

SMCS Code: 4100-016
Model: See Below
Warranty: Six Months

- Appropriate plate and shim assembly used to compress steering clutch springs

Part No.	Model
5F-5034	D5, D6, D6B, 561B, 561C, D7, D7E, D7F, 571A, 572E, D8H, 583H, D9, 951B, 977, 983
5F-5039	D6C, D7, D8, 977K
5F-5096	R2, D2, D6C, 561C, D7, D7F, 571A, 572E, D8H, D9, 933, 977K, 983

Tube Expander Tool Groups

SMCS Code: 3154-510, 7051-510
Model: D8L, D9L, D10
Warranty: Six Months

- Used to mechanically expand tubing joints in the case and frame assemblies
- When replacing outside diameter tubing, use:
  8T-0925 for 25.4 mm (1.0 in) (discontinued)
  8T-2845 for 31.75 mm (1.25 in) (discontinued)

Reference
SEHS8467, Special Instruction

Item	Description
5	Expander Assembly
2	Gauge

Typical Tube Expander Tool Group

(Continued)

Tube Expander Tool Groups (Continued)

SMCS Code: 3154-510, 7051-510
Model: D8L, D9L, D10
Warranty: Six Months

Item	Part Number	Description	Outside Diameter Tubing
--	8T-0925	Tube Expander Tool (discontinued)	25.4 mm (1.0 in)
--	8T-2845	Tube Expander Tool (discontinued)	31.75 mm (1.25 in)
Service/Repair Parts in discontinued 8T-0925 Group			
1	4B-9820	Wrench	--
2	8B-3618	Wrench	--
4[1]	8T-0924	Spacer	--
4	8T-0927	Spacer	--
4	8T-0929	Spacer	--
4	8T-0931	Spacer	--
Service/Repair Parts for the discontinued 8T-2845 Group			
1	4B-9820	Wrench	--
2	8B-3618	Wrench	--
3	8T-0919	Spacer	--
3	8T-0922	Spacer	--
4	8T-2847	Expander Assembly	--

[1] Includes an additional spacer

Tube Expanders for 797 Off-Highway Truck Axle Housing

Essential Tool

SMCS Code: 3260-010
Model: 797 (5YW1-UP) and 797B (JSM1-UP) Off-Highway Truck
Warranty: Six Months

- Used to mechanically expand tubing joints in 196-1406 Housing Assembly and 189-2560 Rear Axle Housing Assembly

Reference

REHS2555, Special Instruction, Procedure for Using the Tube Expanders on 797/797B Off-Highway Trucks

Item	Part Number	Tubing Outer Diameter
1	256-7298	--
2	256-7299	--
3	256-7300	--
4	256-7301	--
Tube Part Numbers for 256-7298		
--	193-1087	31.75 mm (1.250 in)
--	193-1088	31.80 mm (1.252 in)
--	193-1089	31.75 mm (1.250 in)
--	193-1090	31.75 mm (1.250 in)
--	194-4506	31.80 mm (1.252 in)
--	207-4614	31.80 mm (1.252 in)
Tube Part Numbers for 256-7299		
--	155-4722	63.50 mm (2.500 in)
--	197-4853	63.50 mm (2.500 in)
Tube Part Number for 256-7300		
--	193-1091	25.40 mm (1.000 in)

(Continued)

Tube Expanders for 797 Off-Highway Truck Axle Housing (Continued)

Essential Tool

SMCS Code: 3260-010
Model: 797 (5YW1-UP) and 797B (JSM1-UP) Off-Highway Truck
Warranty: Six Months

Item	Part Number	Tubing Outer Diameter
Tube Part Numbers for 256-7301		
--	193-1092	19.05 mm (0.750 in)
--	195-8813	19.05 mm (0.750 in)

9S-1373 Bolt

SMCS Code: 4100-016
Model: D6, D7, No. 6, 572, 977
Warranty: Six Months

Part Number	Description
9S-1373	Bolt

- Used with other tools for compressing steering clutch springs when disassembling steering clutches in field

Steering Clutch Assembly Installation Tools

SMCS Code: 4100-012
Model: D4C, D4D, D5, D6B Tractors, 955 and 977 Traxcavator and 562B Pipelayer
Warranty: Six Months

- Used to install steering clutch assemblies on bevel gear shafts
- Also used to install final drive pinion flanges

Item	Part Number	Description
1	7B-8364	Bolt
2	7M-7237	Adapter
3	7M-7238	Sleeve
4	7B-8363	Bolt

174-5354 STOR Plug Assembly

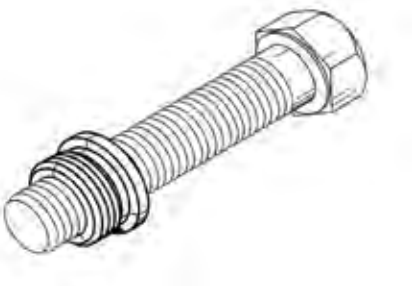
Essential Tool

SMCS Code: 4106-016
Model: D3500E, D3500E II, D400E, D400E II Articulated Truck
Warranty: Six Months

- Used to install brake piston retainer O-rings
- Provides safe, easy O-ring installation
- Requires 4 plug assemblies for procedure

Application Procedure

1. To install ADT disc brake piston retainer spring, insert four 134-2562 Guides and discontinued 130-8718 Springs as an assembly into brake group anchor exterior holes where 9S-9334 Plugs are normally located.
2. Insert four 174-5354 Plug Assemblies into exterior holes and finger tighten.
3. Screw in attached bolts until guide noses protrude through brake piston.
4. Insert discontinued 6N-9155 Pin into each guide hole and remove bolts and plugs.
5. Insert four 9S-9334 Plugs into vacated holes.



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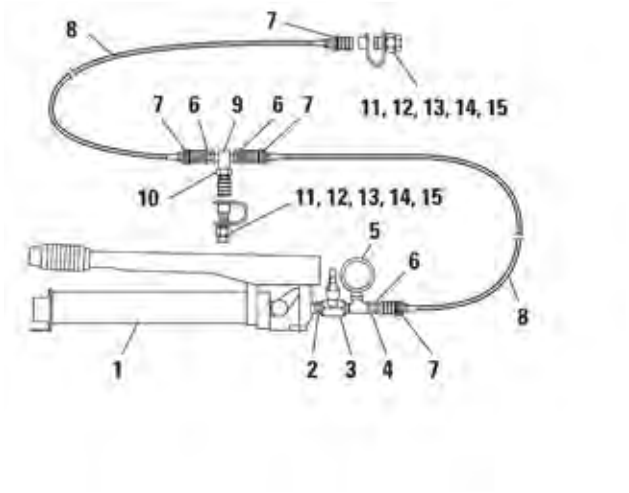
174-5354 STOR Plug Assembly (Continued)
Essential Tool

SMCS Code: 4106-016
Model: D3500E, D3500E II, D400E, D400E II Articulated Truck
Warranty: Six Months

Part Number	Description
174-5354	STOR Plug Assembly

FT2529 Brake Release Hose Group

SMCS Code: 4251-553
Model: 24H Motor Grader
Warranty: None



- Used to release service brakes for towing a disabled motor grader
- Used with 9U-6600 Hand Pump Group
- Releases brakes on both left and right tandem wheels at the same time
- Pump group must supply 2756 kPa (400 PSI) pressure to release service brakes
- Easily adapted to motor graders brake system
- Made of commonly available parts
- Maximum working pressure: 2756 kPa (400 PSI)

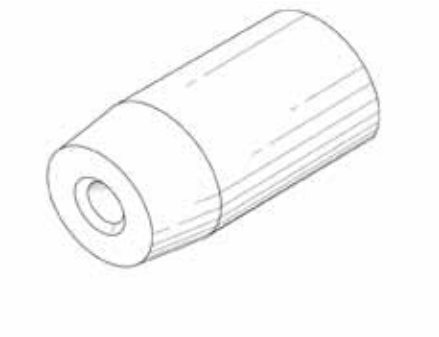
Reference
SENR9000, Service Manual

Item	Part No.	Description	Qty.
1	1U-5230	Hand Pump	1
2	5S-2403	Fitting - Reducing Nipple	1
4	177-7860	Hose Assembly	2
4	2D-7325	Pipe Tee	1
7	1S-8937	Valve - Needle	1
9	3S-6115	Tee	1
10	3K-0360	Seal - O-ring - STOR (SAE 3/4 - 16)	2
10	6V-4143	Coupler Assembly	2

Item	Part No.	Description	Qty.
10	6V-3966	Pressure Test Valve, 1/4 in-18 NPTF external	1
10	6V-4144	Coupler Assembly (For 42000 kPa)	1
10	5P-6944	Adapter	2
10	6V-3965	Nipple Assembly	2
10	3J-1907	O-ring Seal for 5P-9617 Adapter	2
11	6V-0852	Dust Cap (Blank) (not pictured)	2
11	8T-0855	Gauge - Pressure	1

338-8646 Extender Pin
Essential Tool

SMCS Code: 4303-010
Model: 993K Wheel Loader
Warranty: Six Months



- Used to properly install steering cylinder pins
- Used with other tooling to pull pin into steering cylinder spherical bearing and machine brackets
- Tapered end helps align components during assembly
- Works on both ends of steering cylinders

Reference

KENR5832, 993K Wheel Loader Machine Systems, Disassembly and Assembly, Steering Cylinder Remove and Install

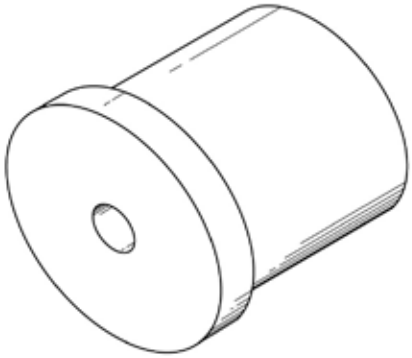
Part No.	Description	Size	Qty.
Other Required Tooling			
9U-5344	Puller Stud, M30 x 800 mm (31.5 in)[1]	M30 x 3.50 cut to a length of 432 mm (17.0 inch)	2
8T-1583	Nut	M30 x 3.50	2
9X-8399	Washer	--	2
6V-3175	Hydraulic Cylinder	--	1
3S-6224	Pump Group - Hydraulic (115V)	--	1
9S-8880	Sleeve	--	1

[1] Must be cut to 690 mm (27.2 in) long for interior linkage pin removal.

Drive Line and Axle

FT2549 Receiver Sleeve

SMCS Code: 3159-011
Model: D250E and D300E Articulated Trucks
Warranty: None



- Used to remove idler shaft while protecting gear case from possible damage
- Used with 6V-3175 Cylinder, 5P-4184 Stud (1 1/4 - 12), 9U-6832 Nut, and 9U-6600 Hydraulic Hand Pump
- Eliminates need to use “H” blocks
- Pulling force reacts directly against gear for more reliable removal
- Material: 1018 Steel

Reference
SENR8653, D250E and D300E Articulated Trucks Power Train Disassembly and Assembly

Tool for Differential Disassembly (Articulated Motor Graders)

SMCS Code: 3258-015
Model: “G” Series Articulated Motor Graders
Warranty: Six Months

Step Plate

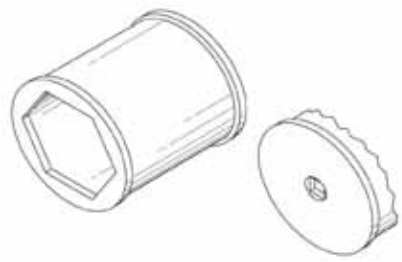
- Step plates used when servicing differentials
- Used to cap hollow shaft and support center screw of push-puller while pulling shaft bearing

Part No.[1]	Size	Motor Grader Model
5P-4170	73.15 x 60.45 mm (2.88 x 2.38 in)	14G

[1] Used on attachment differential with disengagement feature.

328-2047 Nut Driver
Essential Tool

SMCS Code: 3254
Model: 993K Wheel Loader
Warranty: Six Months



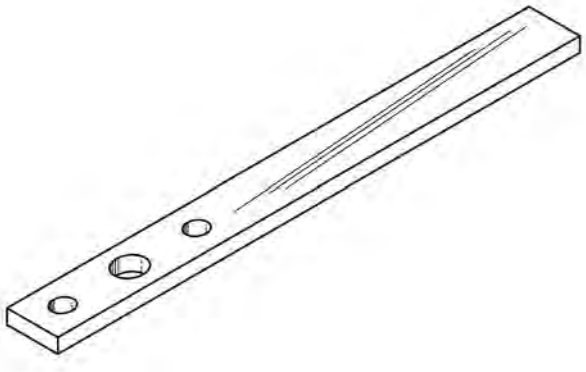
- Used to remove and install 273-1867 Nut on differential
- Used with 1 inch square drive wrench
- Not to be used with impact air tools
- Welded steel construction
- 6-point hex fits 155 mm nut

Part Number	Description
328-2047	Nut Driver

FT0904 Backlash Indicator

SMCS Code: 3258-017
Model: 631C, 633C, 637, 641B, 650B, 651B, 657B, 660B, and 666B Tractors; 627, 627B, 637, 657B, and 666B Scrapers
Warranty: None

- Used to check backlash between pinion and differential bevel gear



FT1332 Support Bracket

SMCS Code: 1209-010, 3258-010
Model: 769 Truck
Warranty: None

- Used when removing and installing differential assembly
- Supports ball trunnion and axle locating yoke when rear axle and wheels are rolled from underneath truck (attached to differential mounting bolts on 769 axle housings)

9U-5126 Transfer Box Bracket Assembly

SMCS Code: 3159-010
Model: D350D and D400D Articulated Dump Truck or Trucks having discontinued 7U-7490 or discontinued 7U-6042 Gear Case
Warranty: Six Months

- Used with discontinued 1U-9751 Transmission Jack for removal and installation of transfer gear box
- Makes removal and installation easier, safer; less likely to damage parts
- Provides required height to attach gear box to frame, and clearance to roll it out from under frame in lowered position — can't remove and install gear box from above (located up and inbetween rear frame)
- Base plate of jack tilts in all directions to assist with alignment
- Discontinued 1U-9751 Jack provides required minimum and maximum heights (use of bracket assembly with other jacks possible but requires jack with similar minimum/maximum heights and mounting modifications to fit particular jack)

References

D400D Service Manual Module
SENR8202, Power Train Disassembly and Assembly
SEBE4636, Service Letter, 7/9/91

(Continued)

9U-5126 Transfer Box Bracket Assembly (Continued)

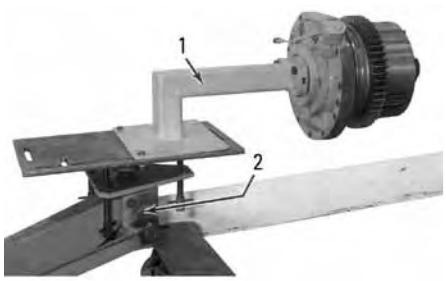
SMCS Code: 3159-010
Model: D350D and D400D Articulated Dump Truck or Trucks having discontinued 7U-7490 or discontinued 7U-6042 Gear Case
Warranty: Six Months

Item	Description	Minimum Pick Up Height	Maximum Lift Height
2	Transmission Jack	140 mm (5.5 in)	708 mm (27.8 in)

Item	Part Number	Description
1	9U-5126	Bracket Assembly

9U-6802 Bracket

SMCS Code: 3287-010
Model: D20D, D25C, D25D, D30C, D30D, D35C, D35HP, D40D, D250B, D250D, D300B, D300D, D350C, D350D, D400, D400D Articulated Dump Trucks
Warranty: Six Months



- Used to remove and install interaxle differential from transfer gear group
- Used with 1U-7505 Jack
- Allows servicing of differential “in frame” after wheels and front axle have been removed
- Significantly reduces installation and removal time
- Eliminates need to remove transmission and gear box to service interaxle differential
- Removal and installation of the 61 kg (135 lb) differential is very difficult without using the 9U-6802 Bracket
- Will accommodate two different yoke sizes, 7c and 8.5c, that are used on above models
- Constructed of 63.5 mm (2.50 in) square tubing with 6.35 mm (0.25 in) wall thickness
- Bracket has 242 x 305 mm (9.5 x 12.0 in) mounting plate which fits either jack
- Other end consists of a plate that bolts onto a 7c or 8.5c yoke on interaxle differential
- Weight: 9 kg (20 lb)

Reference
SENR8226, Service Manual (D20D, D250D)

Item	Part Number	Description
1	9U-6802	Bracket
2	1U-7505	Jack

4C-4170 Lifting Bracket

SMCS Code: 3100-010, 3150-010
Model: D25C, D30C, D35C, D350C
Warranty: Six Months

- Used to remove and install transmission and transfer drive
- Used in disassembly and assembly of drive line components on articulated dump trucks
- Save time and effort — formerly available as fabricated tools
- Improve efficiency and quality of component removal and installation

Reference
SENR8190, Service Manual Disassembly and Assembly

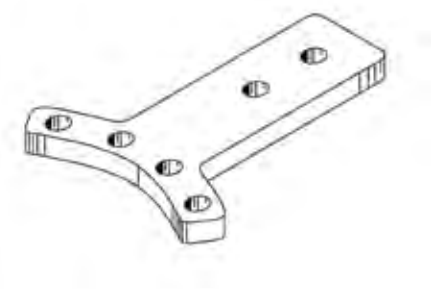
Part Number	Description
4C-4170	Lifting Bracket

143-7597 Lifting Bracket (24H)

SMCS Code: 3258-010
Model: 24H Motorgrader
Warranty: Six Months

European Union compliant, CE marked

- Used to remove differential assembly from machine without removing axle and tandems (makes removal and installation of differential assembly easier and safer)
- Used with 142-6893 Hook Assembly
- Using bracket and hook keeps differential assembly level and aligned with mating components



Overall size	270 x 325 x 25.4 mm (10.6 x 12.8 x 1.00 in)
Hole diameter	26 mm (1.0 in)
Load lift capacity	1010 kg (2225 lb)

Part Number	Description
143-7597	Lifting Bracket (24H)

5P-6153 Pinion Nut Spanner Wrench

SMCS Code: 3150-017, 3258-017, 4072-010
Model: 120G, 130G, 16G, 988B, 613, 941, 951, 955K and 955L Tractor Loader, D4D Tractors
Warranty: Six Months

- Used for turning pinion bearing adjustment nut when adjusting differential pinion bearings of 988B Wheel Loader
- Can also be used to tighten and loosen wheel bearing retainer nuts on 613 Tractor-Scrapers
- Used to remove and install retaining nut for clutch release bearing

Part Number	Description
5P-6153	Pinion Nut Spanner Wrench

Modified Hook Spanner Wrenches

SMCS Code: 3250-017
Model: All models with power train components
Warranty: Six Months

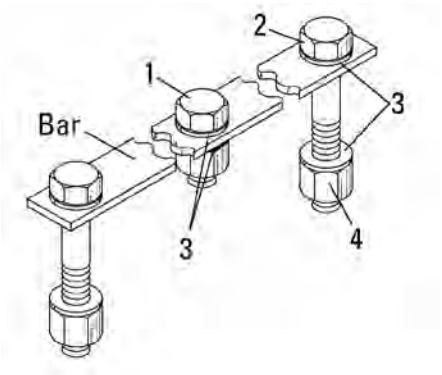
- Used to properly tighten slotted retainer nuts without requiring spanner sockets
- Used with 9U-5006 Torque Wrench
- One wrench will fit several sizes of retainer nuts
- Maximum torque 340 Nm (250 ft-lb)
- A slide rule type torque computer, Form SEHS7150, is available to determine torque wrench dial reading for different center-to-center distances
- Center-to-center distance must be measured from center of square drive to center of retainer nut when wrench is in place

Reference
SEHS7150, Torque Computer

Part Number	Square Drive	Retainer Nut Diameter Range
280-2059	1/2 in	31.8 - 76.2 mm (1.25 - 3.00 in)
280-2060	1/2 in	50.8 - 120.7 mm (2.00 - 4.75 in)
280-2061	1/2 in	114.3 - 158.8 mm (4.50 - 6.25 in)

FT2737 Rolling Torque Bars

SMCS Code: 3260-016
Model: See below
Warranty: None



- Used to measure rolling torque value of axle shaft assembly (reading is taken at axle centerline, eliminating need for any additional calculations)
- Made from standard bar stock and attaches to existing holes in axle housing with common hardware
- Material: SAE 1018 steel

Reference

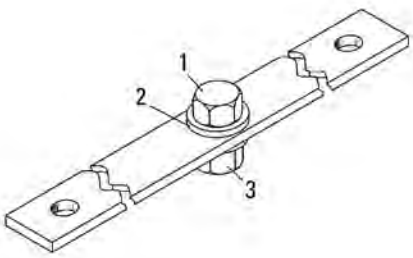
SENR6687, Service Manual Module, Disassembly and Assembly, 515 and 525 Wheel Skidders Power Train

Part No.	Model	Used With
FT2530	525 Wheel Skidder	standard torque wrench and 24 mm hex socket
FT2783	966F Wheel Loader	standard torque wrench and 16 mm socket

Item	Part Number	Description	Size	Qty.
1	6V-5844	Bolt	M16 x 2.0 thread, 35 mm (1.4 in) long	1
2	8T-4174	Bolt	M16 x 2.0 thread 120 mm (4.7 in) long	2
3	9X-8257	Hardened Flat Washer	M16	6
4	8T-4132	Nut	M16 x 2.0 thread	3

FT2737 Rolling Torque Bar Essential Tool

SMCS Code: 4050-016
Model: 5110B Excavator
Warranty: None



- Used to measure rolling torque value of bearing preload in final drive
- Readings are taken at drive housing centerline (eliminates need for calculations)
- Used with standard torque wrench and 24 mm (0.94 in) hex socket
- Made from standard bar stock
- Attaches to existing holes in final drive housing with common hardware
- Material: SAE1018 steel

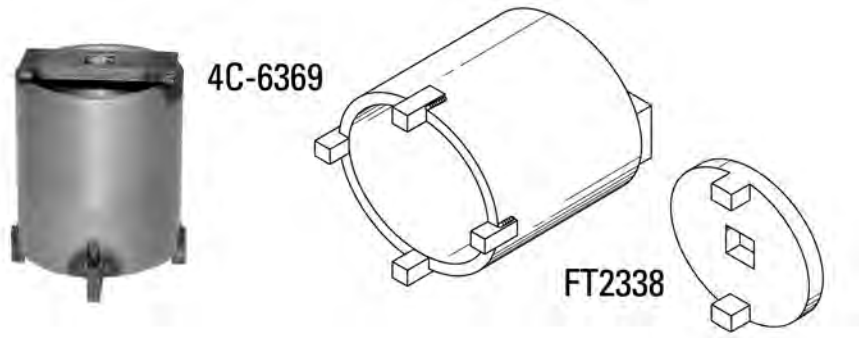
Item	Part Number	Description	Size	Qty.
1	6V-5844	Bolt	M16 x 2.0 thread, 35 mm (1.4 in) long	1
2	9X-8257	Hardened Flat Washer	M16	2
3	8T-4132	Nut	M16 x 2.0 thread	2

Spanner Wrenches

SMCS Code: 3250-017
Model: 910E Wheel Loader, IT12 and IT14 Integrated Toolcarriers
Warranty: 4C-6369 Spanner Wrench: Six Months, FT2338 Spanner Wrench: None

- Required for disassembly and assembly of front and rear axle and differential groups
- FT2338 used for removal and installation of 9C-7292 Bearing Nut; 2 nuts in each bevel gear group
- 4C-6369 Spanner Wrench fits 9C-6353 Bearing Nuts, part of axle housing groups; nuts retain axle shafts in housing

Part No.	Square Drive Size	O.D.	Number of Teeth	Tooth ID	Tooth Width
FT2338	3/4 in	101.6 mm (4.0 in)	2	103 mm (4.06 in)	9.52 mm (0.38 in)

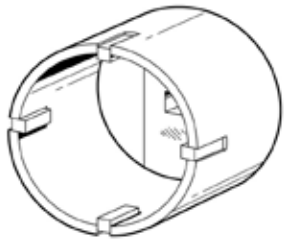


Part No.	Square Drive Size	O.D.	Number of Teeth	Tooth ID	Tooth Width	Effective Inside Depth
4C-6369	3/4 in	127 mm (5.0 in)	4	103 mm (4.06 in)	9.52 mm (0.38 in)	127 mm (5.0 in)

141-3255 Locknut Spanner Wrench

SMCS Code: 3259-017
Model: PS360 Pneumatic Compactors
Warranty: Six Months

- Used to remove and install 138-3817 Bearing Locknut in front axle shafts (makes procedure much faster and easier while eliminating damage caused by conventional punch and hammer methods)
- Also used to check rolling torque of axle shaft bearing preload

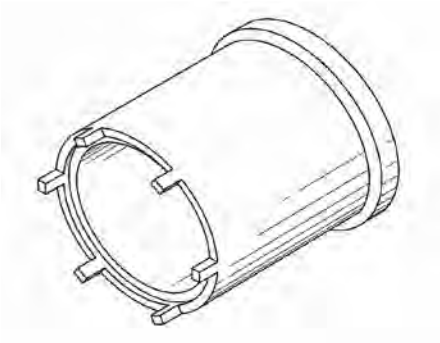


Diameter	133.4 mm (5.25 in)
Overall length	127 mm (5.0 in)
Inside diameter between teeth	113 mm (4.45 in)

Part Number	Description
141-3255	Locknut Spanner Wrench

338-3941 Spanner Wrench Assembly
Essential Tool

SMCS Code: 3250-017
Model: M315C Wheeled Excavators
Warranty: Six Months



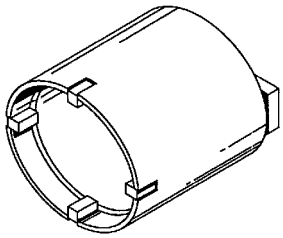
- Used to remove and install 246-6871 Nut on differential
- Used with 1 inch square drive wrench
- 6-tooth design fits special 130 mm nut
- Not to be used with impact air tools
- Welded steel construction
- Hardened (RKW C35-41) for long service life
- Black oxide coating to resist corrosion

Square drive	1 inch
Number of teeth	6
Tooth ID	122.50 mm (4.83 in)
Tooth OD	133.35 mm (5.25 in)
Tooth width	10.25 mm (.40 in)

Part Number	Description
338-3941	Spanner Wrench Assembly

125-4634 Retaining Nut Spanner Wrench

SMCS Code: 3250-017
Model: 914G and 924F Wheel Loader, IT14G and IT24F Integrated Tool Carrier
Warranty: Six Months



- Used to remove and install 110-5425 Nut retaining axle shaft in housing (914G) and 8R-2532 Nut (924F) — required tool to properly make repairs and adjustments
- Used with 3/4 inch square drive ratchet or torque wrench
- Designed to reach nut inside of axle housing
- Pilots around axle shaft to provide positive engagement
- Wrench provides means to correctly tighten nut to obtain proper rolling torque on the bearing
- Using other tools to install or remove nut may destroy nut or damage threaded portion of axle shaft
- Hardened for added strength and durability

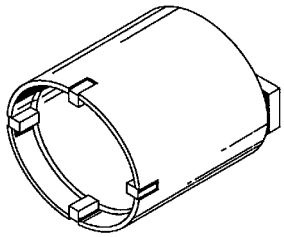
Square drive	3/4 in
Outside diameter	127 mm (5.0 in)
Inside diameter	116.5 mm (4.59 in)
Length	200 mm (7.9 in)
Teeth	four equally spaced
Tooth width	7.5 mm (0.30 in)
Distance between teeth	103.5 mm (4.07 in)

Part Number	Description
125-4634	Retaining Nut Spanner Wrench

120-9877 Retaining Nut Spanner Wrench
Essential Tool

SMCS Code: 3250-017
Model: 950F, 950G, 960F, 962G Wheel Loader and IT62G Integrated Tool Carrier
Warranty: Six Months

- Used to remove and install 9C-8419 Nut retaining the axle shaft in housing (required tool to properly make repairs and adjustments)
- Designed to reach nut inside of axle housing
- Pilots around axle shaft to provide positive engagement
- Provides means to correctly tighten nut to obtain proper rolling torque on the bearing
- Using other tools to install or remove nut may destroy nut or damage threaded portion of axle shaft
- Hardened for added strength and durability



Square drive	3/4 in
Outside diameter	152.4 mm (6.0 in)
Inside diameter	139.7 mm (5.5 in)
Length	319.05 mm (12.6 in)
Teeth	4 equally spaced
Tooth width	11.0 mm (0.43 in)
Distance between teeth	134 mm (5.28 in)

Part Number	Description
120-9877	Retaining Nut Spanner Wrench

305-2745 Spanner Wrench Assembly
Essential Tool

SMCS Code: 6605
Model: CB112E, CB14, CB114E Compactors
Warranty: Six Months

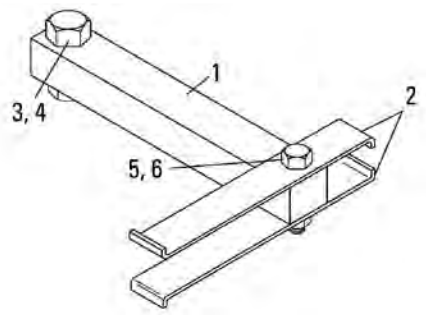
- Used to remove and install 292-3981 Rubber Drum Mounts
- Used with 1/2 inch square drive wrench or torque wrench
- Provides means to tighten drum mount to correct torque specification
- Not for use with impact wrench
- Hardened for added strength and durability

Square drive	1/2 inch
Number of slots	6, equally spaced
Slot width	9 mm (.35 in)
Inside diameter	118.5 mm (4.66 in)
Outside diameter	130 mm (5.12 in)
Length	107.7 mm (4.24 in)

Part Number	Description
305-2745	Spanner Wrench Assembly

FT2563 Differential Adjustment Group
Essential Tool

SMCS Code: 3263-016
Model: 914G Wheel Loader and IT14G Integrated Tool Carrier
Warranty: None



- Used to compress clutch pack to determine correct shim adjustment
- Used with torque wrench and dial indicator
- Allows measurement to be taken directly from indicator during assembly
- Faster assembly by eliminating additional measurements and calculations
- Made from common steel and Cat® hardware

Reference

SENR5785, Disassembly and Assembly Limited Slip Differential Supplement for Wheel Loaders and Integrated Tool Carriers

Item	Decsription	Size	Material	Qty.
1	Bar	25.4 x 25.4 x 205.0 mm (1.00 x 1.00 x 8.07 in)	SAE1045 steel	1
2	Plate	2.77 x 25.4 x 153 mm (0.109 x 1.00 x 6.02 in)	SAE1018 steel	2

Item	Part Number	Description	Size
3	5P-2566	Hex Head Bolt	1/2-13 x 38.10 mm (1.50 in)
4	6V-8188	Nut - Full	1/2-13
5	5P-2675	Hex Head Bolt	1/4 - 20 x 44.45 mm (1.75 in)
6	7H-8909	Locknut	1/4 - 20

140-3073 Locknut Spanner Wrench
Essential Tool

SMCS Code: 3107-017
Model: D3C, D4C, and D5C Track-Type Tractor, Hystat Drive
Warranty: Six Months

- Used to remove and install 2H-3777 Locknut on yoke shaft
- Required for disassembly and assembly of power takeoff (PTO) Drive Group
- Extends over yoke shaft to reach locknut inside housing counter bore
- Provides positive engagement
- Makes removal and installation of locknut easier

Reference

SENR1251, Disassembly and Assembly D3C, D4C, D5C Track-Type Tractor Power Train

Outside diameter	63.5 mm (2.50 in)
Overall length	89.2 mm (3.51 in)
Key width	3.5 mm (0.14 in)
Span (between keys)	48.9 mm (1.93 in)
Key spacing	4, equally spaced
Square drive	1/2 in

Part Number	Description
140-3073	Locknut Spanner Wrench

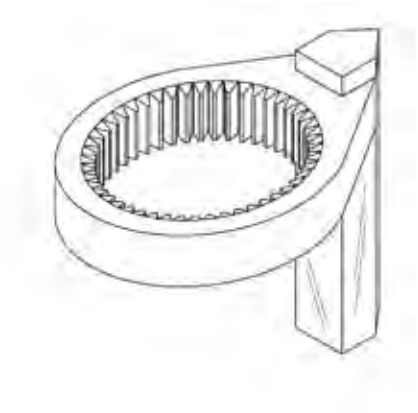
FT3041 Reaction Arm

SMCS Code: 3013
Model: 525B (3KZ), 535B (AAE) Wheel Skidders
Warranty: None

- Used to remove and install front axle mounting bolts
- Used with 194-7586 Pneumatic Wrench Group (RAD 2000)

Reference

RENR4336, 525B and 535B Wheel Skidder Power Train, Disassembly and Assembly, Oscillating Axle (Front) Removal and Installation



FT2520 Cap

SMCS Code: 3263-016
Model: 914G Wheel Loader and IT14G Integrated Toolcarrier
Warranty: None

- Used to keep clutch pack together during assembly of bevel gear to differential housing
- Used with 123-6702 Clamping Segment
- Makes assembly faster and easier
- Material: SAE 1018 Steel

Reference

SENR6768, Service Manual Module, Disassembly and Assembly 914G Wheel Loader and IT14G Integrated Toolcarrier Power Train

FT0957 Adapter Group
FT0996 Positioning Group

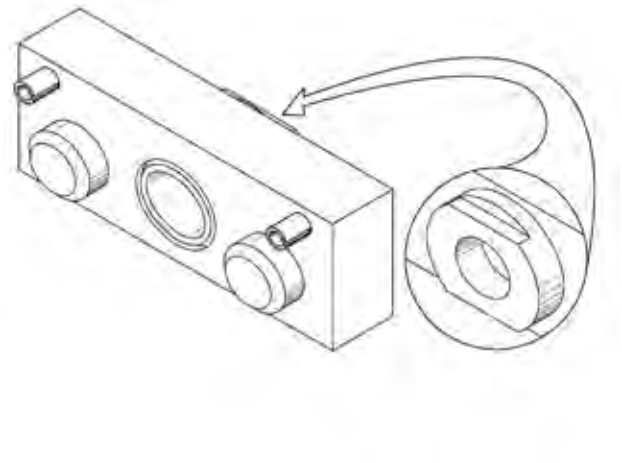
SMCS Code: 3150-017, 3258-017, 4050-017, 4208-017, 4251-017, 5459-017
Model: Most Cat® Models
Warranty: None

- Provide means for mounting differential carrier assemblies on 1P-2420 Transmission Repair Stand
- FT0996 Positioning Group (1) and swivel mounting shoes (4) can also be adjusted to mount marine gear input shafts with their clutch packs

Item	Part No.	Description
1	FT0996	Positioning Group (4)
FT0957 Adapter Group		
2		Bracket (R.H.)
3		Bracket (L.H.)
4		Mounting Shoe (4)

FT1055 Drill Fixture

SMCS Code: 3250-023
Model: 631, 633, 637, 657, and 666 Tractor-Scrapers
Warranty: None

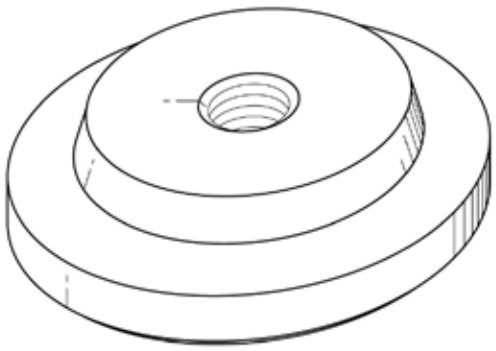


- Used as guide for drilling additional holes in differential flange when installing new ring gear
- Material: SAE1020 steel

FT0511 Seal Driver

SMCS Code: 3250-012
Model: 621 Tractor
Warranty: None

- Used with FT0514 Handle to install drive shaft seal
- Material: SAE1020 steel



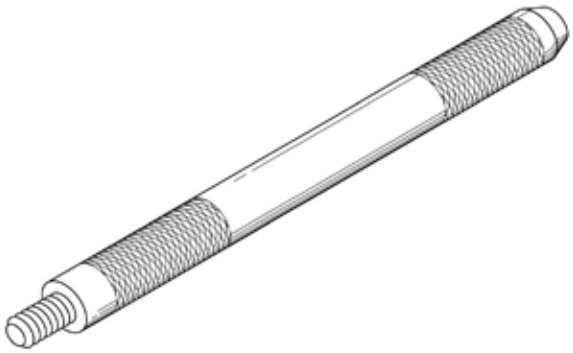
FT0512 Driver
FT0513 Driver

SMCS Code: 3250-012
Model: 621 Tractor
Warranty: None

- Used with FT0514 Handle to install front and rear drive shaft bearing
- Material: SAE4140 steel

FT0514 Handle

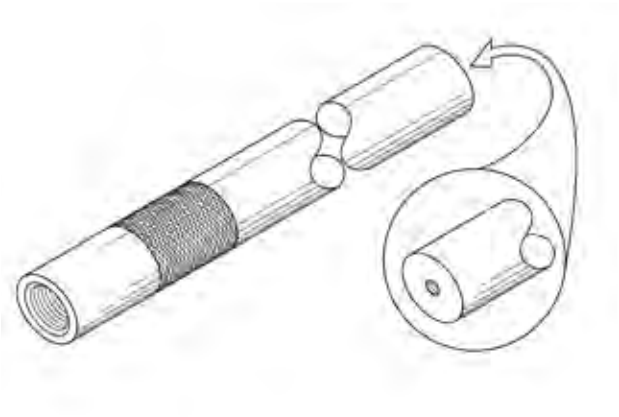
SMCS Code: 3258-016, 3258-017
Model: Most Cat® Models
Warranty: None



- Used with FT0511 Driver, FT0512 Driver, and FT0513 Driver
- Material: SAE1020 steel

FT0899 Driver Handle

SMCS Code: 3250-012
Model: 657B and 666B Scrape
Warranty: None



- Used with driver plates from 1P-0520 Driver Set for installing 7S-2472 Race and Roller Assembly in differential housing
- 9S-5563 Cap can be installed on end to protect tool from battering
- Material: SAE1020 steel

FT1393 Adjusting Ring Spanner Wrench

SMCS Code: 3258-016, 3258-017
Model: 992C Wheel Loader
Warranty: None

- Used to turn 7K-0056 Adjusting Rings which are tightened to preload differential bearings

6V-0188 Alignment Tool

SMCS Code: 3120-010, 3253-010
Model: 621B, 45P-2214-Up; 623B, 46P-1298-Up; 627B, 14S861-Up and 627 P.P., 15S-1168-Up
Warranty: Six Months

Part Number	Description
6V-0188	Alignment Tool

- Used to align engine with driveshaft during servicing
- Later machines (see models above) have solid driveshaft arrangement; exact alignment of engine with driveshaft is necessary or severed drive line damage will occur

Reference
SMHS7589, Special Instruction

FT0540 Driver

SMCS Code: 3250-011
Model: 966A Wheel Loader
Warranty: None

- Used to drive universal joint from axle shaft
- Material: 1018 Steel

8S-8303 Wrench

SMCS Code: 3257-025
Model: 951B Traxcavator
Warranty: Six Months

- Used to adjust bevel gear bearings
- Replaces discontinued 7M-7239 Wrench used on all previous machines

Part Number	Description
8S-8303	Wrench

FT0942 Seal Driver

SMCS Code: 3258-017, 3258-017FR, 3258-017RE
Model: 657B and 666B Scrapers
Warranty: None

- Used with FT0108 Driver Handle to install differential pinion carbon face seal
- Material: mild steel

Differential Pinion Bearing Assembly Tools

SMCS Code: 3250-017
Model: 630, 631, 632, 633, 637, 641, 650, 651, 657, 660, and 666 Wheel Tractors
Warranty: Six Months

- Used for assembly of differentials having tapered roller, pinion bearings
- Bearing retainer, bearing, and pinion are assembled over 5P-1730 Holding Fixture which is designed to be clamped in a vise; use 5P-0964 Spanner Wrench to tighten spanner nut which retains bearing

Item	Part Number	Description
1	5P-1730	Holding Fixture
2	5P-0964	Spanner Wrench

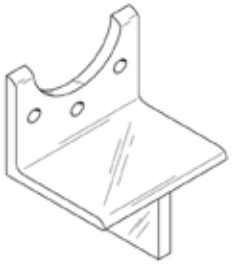
FT3000 Reaction Plate Assembly

SMCS Code: 3250-017
Model: M325C Material Handler
Warranty: None

- Used to hold axle pinion assembly from rotating during tightening procedure
- Material: SAE 1020M Steel

Reference

RENR7164, M325C Material Handler, Power Train Systems Disassembly and Assembly



Socket Wrenches

SMCS Code: 3254-010
Model: See Below
Warranty: Six Months

- Used to remove and install differential pinion shaft nut
- Make it easier and faster to remove and install “stake-type” differential pinion shaft nuts
- All have 3/4 inch square drive

Part Number	Use
1U-6689	For 3.5 in 9V-6563 Stake Nut on D25C (9YC455-Up), D35C (2GD87-Up), D35HP (3FD67-Up), D350C (8XC170-Up), D400 (1MD105-Up) Articulated Dump Trucks; 528 Skidders; 613, 613B, 613C Scrapers; 814B Wheel Tractors; 815B, 816B Compactors; 950B, 950E, 966D, 966E Wheel Loaders
1U-6690	For 4.0 in 6W-4750 Stake Nut on D44B, D550B Articulated Dump Trucks; 824C, 834B Wheel Tractors; 980C, 988B Wheel Loaders
1U-6691	For 5.5 in stake nut on 992C Wheel Loaders (49Z-1093-Up)
1U-6692	For 5.75 in stake nut on 992C Wheel Loaders (49Z1-49Z-1092)
292-4949	For 4 5/8 in 201-8481 Stake Nut on 120, 140, 160M Monarch Motorgraders

317-3804 Spanner Wrench
Essential Tool

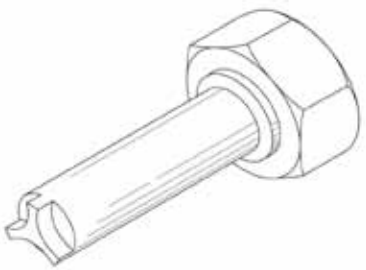
SMCS Code: 5058-017
Model: 120M, 140M, 160M Monarch Motor Graders
Warranty: Six Months

- Used to remove spanner nut located inside 287-1893 All Wheel Drive Piston Motor (nut is part of 312-5544 Flushing Valve Assembly)
- Used with 1 1/2 inch wrench or socket
- Allows easy removal and installation of nut
- Nut is installed with thread lock which increases difficulty of removal without proper tooling
- Also allows proper torque to be applied during assembly

Reference

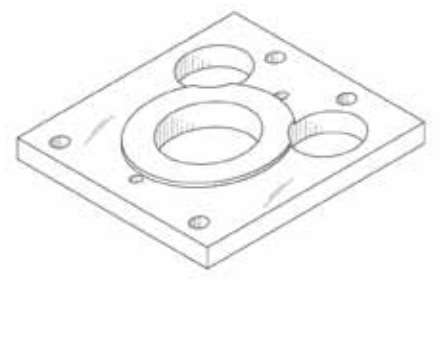
Disassembly and Assembly Manuals AWD Motor Graders

Part Number	Description
317-3804	Spanner Wrench



317-5303 Measuring Plate
Essential Tool

SMCS Code: 5058-017, 5058-082, 5058-550, 5058-0577
Model: 120M, 140M, and 160M Monarch Motor Graders
Warranty: Six Months



- Used to disassemble and assemble 287-1893 All Wheel Drive Piston Motor

Compression Function

- Used as a compression plate
- Attaches with four bolts to compress piston into pump during disassembly and assembly

Measuring Function

- Used as a measuring plate during assembly
- Measurements taken from plate to top of pump oil tubes
- Provides essential oil tube shim calculations for proper pump assembly

Reference

120M, 140M, 160M Disassembly and Assembly Service Manuals

Part Number	Description
317-5303	Measuring Plate

Adjusting Nut Spanner Wrenches

SMCS Code: 3258-017RE
Model: "G" Series Motor Graders
Warranty: Six Months

- Used to adjust differential in the vehicle
- Each wrench fabricated by welding and adjusting nuts for bevel gear support bearings to length of thin wall pipe; lugs of nuts thus serve as teeth for engaging spanner nuts which control support bearing preload and bevel gear backlash

Part Number	Model
FT1516	120G
FT1517	12G, 130G, 140G
FT1518	14G
FT1519	16G

149-5168 Adjusting Ring Spanner Wrench
Essential Tool

SMCS Code: 3258-015, 3258-016
Model: D250E, D300E, D350E, and D400E Series II 725, 730, 735 and 740 Articulated Dump Truck (ADT)
Warranty: Six Months

- Used to turn adjusting ring to set bevel gear backlash (engages holes in adjusting ring)
- Used with 1/2 inch square drive wrench for versatility
- Positive engagement reduces risk of damage to adjusting ring

Plate thickness	12.7 mm (0.50 in)
Pin diameter	4.76 mm (0.188 in)
Pin	8E-8439
Pin orientation	120°
Pin centerline diameter	150.0 mm (5.91 in)
Drive	1/2 in
Fits	138-3624 Nut
Model	D300/D350/D400/730/735/740

(Continued)

149-5168 Adjusting Ring Spanner Wrench (Continued)
Essential Tool

SMCS Code: 3258-015, 3258-016
Model: D250E, D300E, D350E, and D400E Series II 725, 730, 735 and 740 Articulated Dump Truck (ADT)
Warranty: Six Months

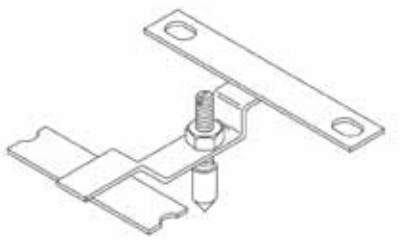
Part Number	Description
149-5168	Adjusting Ring Spanner Wrench

150-0361 Support Bracket Assembly
Essential Tool

SMCS Code: 3258-015, 3258-016
Model: D250E, D300E, D350E, and D400E Series II Articulated Dump Truck (ADT)
Warranty: Six Months

Part Number	Description
150-0361	Support Bracket Assembly

- Used to hold pinion shaft in position during disassembly and assembly
- Bolts to bearing cap mounting face on differential carrier
- Allows rotation of differential with pinion shaft held in place
- Makes overhaul procedure easier and faster
- Overall size: 309 x 360 mm (12.2 x 14.2 in)



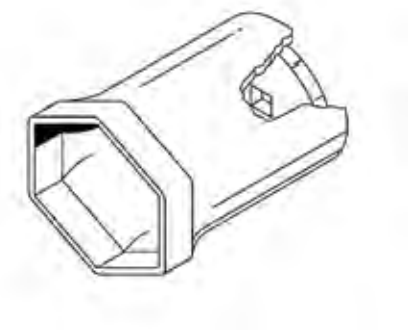
125-5723 Socket Wrench Assembly

SMCS Code: 3254-010
Model: 988F Wheel Loader, 834B Wheel Tractor, 836 Landfill Compactor
Warranty: Six Months

- Used to remove and install 8R-0052 Stake Nut on differential pinion shaft
- Used with 3/4 inch square drive socket wrench
- Makes removal and installation of “stake-type” pinion shaft nuts easier and faster

Overall length	170.2 mm (6.70 in)
Hex opening	115.1 mm (4.53 in)
Hex depth	25.4 mm (1.00 in)
Square drive size	3/4 in

Part Number	Description
125-5723	Socket Wrench Assembly



268-2866 Spanner Socket
Essential Tool

SMCS Code: 3254-010
Model: RM350 Road Reclaimer/Soil Stabilizer
Warranty: Six Months

- Used to remove and install axle retaining nut in order to set torque
- Steel construction for long life
- Used with 3/4 inch square drive torque wrench or breaker bar

Length	88.9 mm (3.50 in)
Socket size	106 mm
Square drive	3/4 in

Part Number	Description
268-2866	Spanner Socket

5P-4727 Locknut Spanner Wrench

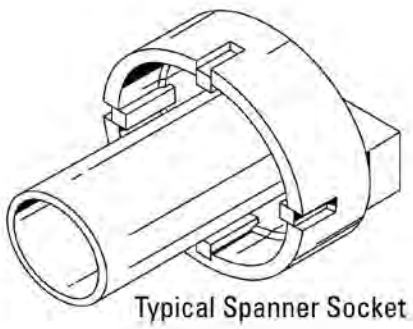
SMCS Code: 3258-017
Model: 14G Motor Grader
Warranty: Six Months

- Used with 3P-1535 Chain Wrench to remove and install differential pinion bearing locknut

Part Number	Description
5P-4727	Locknut Spanner Wrench

Spanner Sockets

SMCS Code: 3159-015/016, 3256-015/016, 0602
Model: D10R and D11R Track-Type Tractor
Warranty: Six Months


Typical Spanner Socket

- Used to remove and install bearing nut
- Required for disassembly and assembly of bevel and transfer gear group
- Pilots off of inside diameter of shaft providing positive engagement of nut
- Reduces damage to nut caused by using improper removal and assembly tooling

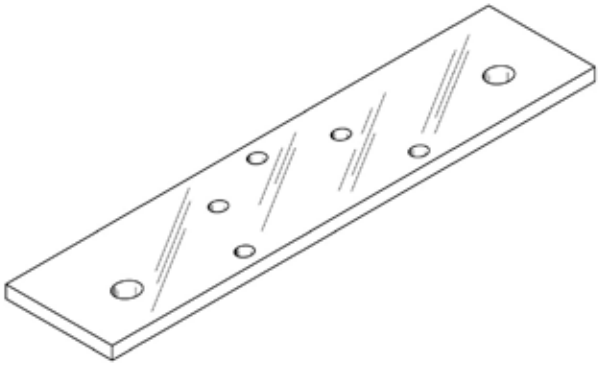
References
SENR8422, Service Manual, Disassembly and Assembly D10R Tractor, Power Train
SENR3287, Service Manual, Disassembly and Assembly D11R Tractor, Power Train

Part Number	Model	Bearing Nut	Length	Outside Diameter	Bearing Nut Torque	Square Drive
129-3253	D10R	121-9871	177.9 mm (7 in)	165.1 mm (6.50 in)	2375 N.m (1758 ft-lb)	1 in
129-3254	D11R	119-3711	178.9 mm (7.04 in)	177.8 mm (7 in)	2375 N.m (1758 ft-lb)	1 in

FT2561 Plate Retaining

SMCS Code: 3159 and 3256-015, 3159 and 3256-016
Model: D11R Track-Type Tractor
Warranty: None

- Used to keep gears in bevel and transfer gear group from rotating while loosening or tightening bearing nut
- Used with 129-3254 Spanner Socket
- Provides most efficient way to hold gears while eliminating potential damage from using other holding methods
- Material: ASTM A36 steel



FT1186 Axle Installation Tool

SMCS Code: 3259-010
Model: 637 and 637B Scrapers, 26R, 64M, 91N and 92N
Warranty: None

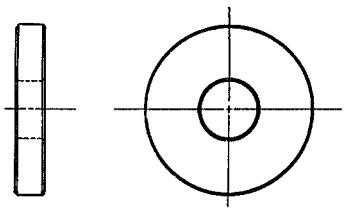
- Used to properly install axle into differential
- Material: SAE1040 steel

4C-6808 Plate

SMCS Code: 3280-782
Model: 446 Backhoe Loader
Warranty: Six Months

- Used on drive axle to quickly and easily determine accurate shim thickness to obtain correct contact pattern
- 2 plates needed; used with the 1U-5847 Shaft

Reference
SENR3970, Service Manual



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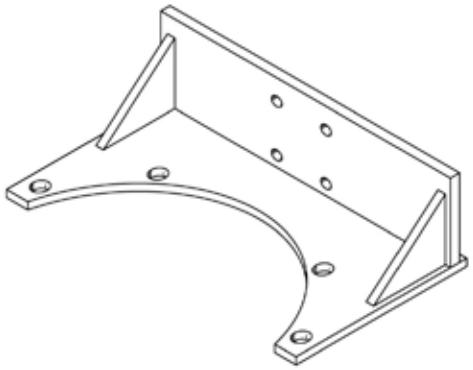
4C-6808 Plate (Continued)

SMCS Code: 3280-782
Model: 446 Backhoe Loader
Warranty: Six Months

Part Number	Description
4C-6808	Plate

FT2350 Adapter Assembly

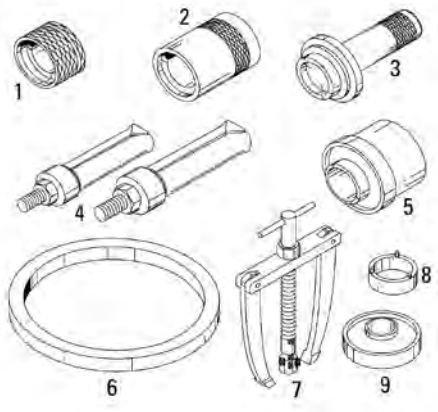
SMCS Code: 3250-010
Model: 446 Backhoe Loader
Warranty: None



- Bolts directly to axle housing, allowing mechanic to work safely on axle
- Axle housing can be rotated for fast, easy servicing

Front Axle Tooling

SMCS Code: 4084-017, 3260-015, 3260-016, 4318-010, 4091-017, 0722
Model: 416C, 426C, 428C, 436C, and 438C Backhoe Loaders
Warranty: Six Months



- Used to disassemble axle without damaging components and to assemble components to correct specifications (these tools are essential to service the machine)
- Used with other common shop tools to make disassembly and assembly easier and faster (helps eliminate damage caused by using improper tools)

Reference

SENR1206, Service Manual, Disassembly and Assembly, 416C, 426C, 428C, 436C, and 438C Backhoe Loaders Power Train

Item	Description	Supplier Part Number	Use
6	Centering Ring	5870-200-062	Measure and adjust pinion depth and backlash - Used with 8T0976 Measuring Cover

(Continued)

Front Axle Tooling (Continued)

SMCS Code: 4084-017, 3260-015, 3260-016, 4318-010, 4091-017, 0722
Model: 416C, 426C, 428C, 436C, and 438C Backhoe Loaders
Warranty: Six Months

Item	Part Number	Description	Supplier Part Number	Use
Service Tools for D and A of C-Series BHL Front Axle (AWD)				
1	140-0162	Bearing Extractor Ring	5870-030-030	Remove the taper roller bearing from final drive hub
2	140-0163	Seal Driver	5870-048-154	Install seal to correct depth on steering knuckle bearing pin
3	140-0164	Seal Driver	5870-048-155	Install shaft seal to correct depth in steering knuckle
4	140-0165	Internal Puller	5870-300-005	Remove sleeve from axle housing bore
4	140-0169	Internal Puller	5870-300-007	Remove bearing seals and races from axle housing
5	140-0166	Seal Driver	5870-048-158	Install pinion shaft seal to correct depth in axle housing
7	140-0168	Two Leg Puller	5870-300-003	Remove miscellaneous seals, races, and sleeves from axle housing
8	140-0170	Measuring Ring	5870-340-034	Determine sleeve length in order to acquire correct rolling torque of pinion bearings
9	140-0171	Adapter Ring	5870-500-032	Measure axle housing to determine correct pinion depth

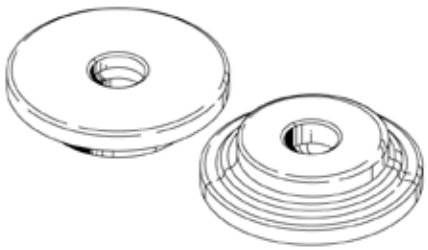
247-4298 Seal Driver

Essential Tool

SMCS Code: 3286-017, 0722
Model: D1-Series Back Hoe Loaders (All Wheel Drive)
Warranty: Six Months

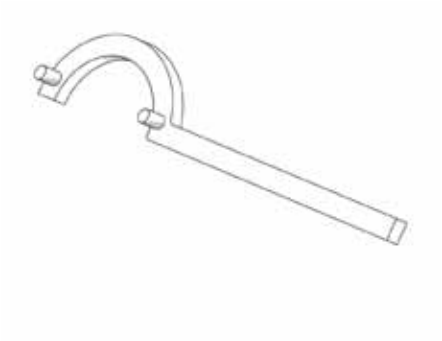
Part Number	Description
247-4298	Seal Driver

- Used to properly install pivot shaft seals on front axle
- Seals will not remain seated if improperly installed



235-2785 Pinion Wrench
Essential Tool

SMCS Code: 3258
Model: All Wheel Drive D-Series Backhoe Loaders produced after 15 Aug 2003
Warranty: Six Months

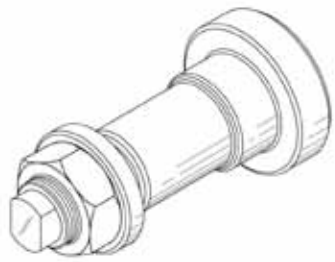


- Used to set pinion shim height (pinion depth setting) on differentials

Part Number	Description
235-2785	Pinion Wrench

294-1081 False Pinion Group
Essential Tool

SMCS Code: 3258
Model: 434E (FSH1-Up) and 444E (LBE1-Up) Backhoe Loader
Warranty: Six Months



- Used to set pinion shim height (pinion depth setting) on differentials
- Allows for shim height measurement before final assembly
- Components not serviced separately
- 46 mm nut with M30 x 3.5 thread

Reference

RENR6475, Service Manual; 416E, 420E, 422E, 428E, 430E, 432E, 434E, 442E, 444E Backhoe Loaders Power Train, Disassembly and Assembly

Part Number	Description
294-1081	False Pinion Group

Axle Repair Tools

SMCS Code: 3254, 3258, 3260, 4084, 4321-017
Model: 438B Backhoe Loader
Warranty: Six Months

- Used to disassemble and assemble all wheel steer rear axle (ZF APL-2075) (tools are essential for correct removal and assembly of parts)
- Using these and other available tools make repair work on axle much faster and easier

127-9304 Nut Spanner

- Used to remove slotted nut inside final drive (other removal methods can permanently damage spanner nut and mating parts, making them unusable)
- Used with spring scale to obtain correct rolling torque

123-6702 Clamping Segment

- Used to positively measure backlash between ring and pinion gear
- Used with 127-9305 Measuring Cover and 8T-5096 Gauge Group

Measuring Tools

- 127-9305 Measuring Cover Group used to determine shim pack and obtain correct backlash between pinion and bevel gear (used with measuring ring and 1U-5847 Measuring Shaft)
- Measuring cover group is also used with 123-6702 Clamping Segment
- Measuring ring used to determine thickness of shim pack when assembling pinion gear into housing

Drivers

- Seal driver used to install pinion seal into differential housing (correctly positions seal)

(Continued)

Axle Repair Tools (Continued)

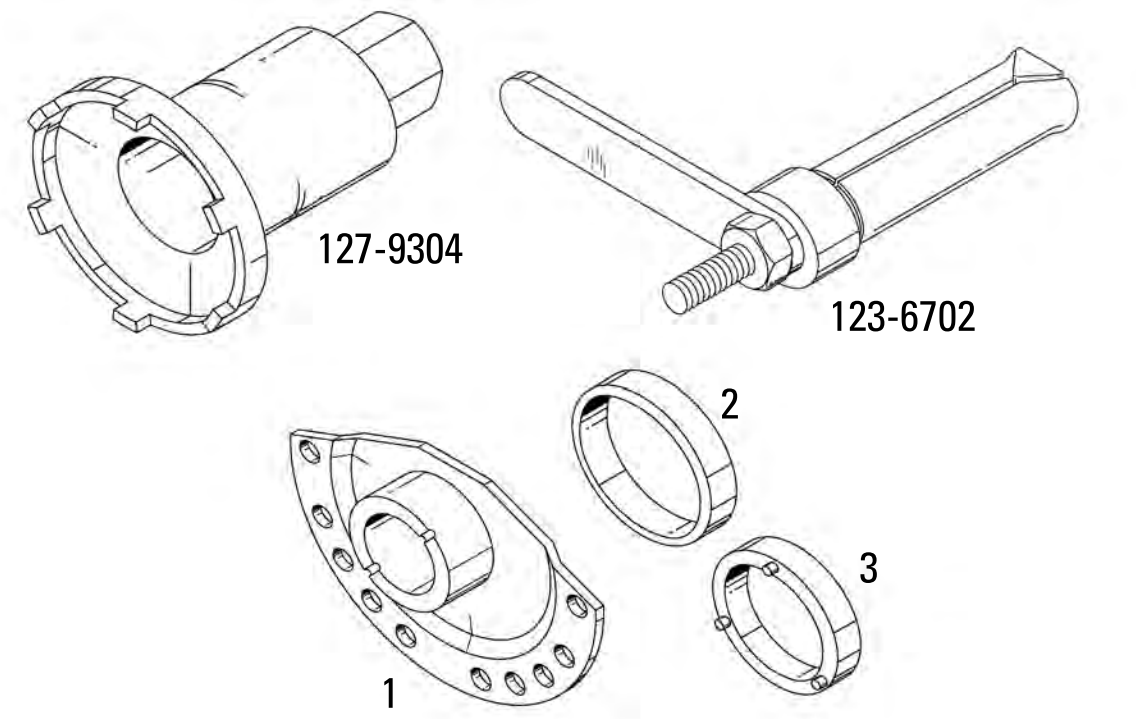
SMCS Code: 3254, 3258, 3260, 4084, 4321-017
Model: 438B Backhoe Loader
Warranty: Six Months

- Bearing driver used to install bearing race into upper and lower steering knuckle bore
- 127-9310 Sleeve Driver used to install sleeve into center bore of axle housing and center bore of steering knuckle hull

Reference

SENR5820, Service Manual Module, Disassembly and Assembly, 438B Backhoe Loader All Wheel Steer Attachment

Item	Description
2	Measuring Ring
3	Measuring Ring

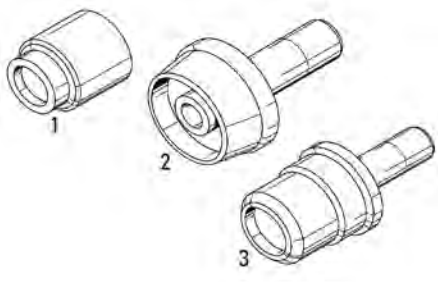


Item	Part Number	Description
1	127-9305	Measuring Cover Group

Axle Repair Tools

Item	Description
1	Seal Driver
2	Bearing Driver

Item	Part Number	Description
3	127-9310	Seal Driver



FT1034 Sleeve

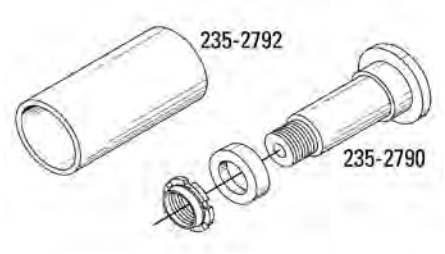
SMCS Code: 3275-017
Model: 518, 528
Warranty: None

- Used with bench vise to disassemble and assemble self-adjusting disc brake piston on drive shaft

Item	Part No.	Description
1	3B-7749	Nipple

235-2790 False Pinion, 235-2792 False Differential Essential Tool

SMCS Code: 3254, 3258, 3260, 4084, 4321-017
Model: 424D Backhoe Loader
Warranty: Six Months

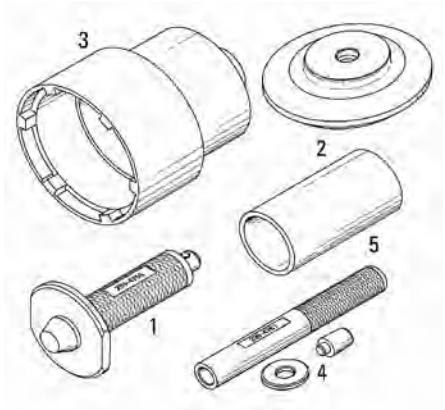


- Used to properly set pinion depth and shim height during differential repair procedure
- Used on 168-7447 Axles

Part Number	Description
235-2790	False Pinion
235-2792	False Differential

Rear Axle Tools for 450E Backhoe Loader Essential Tool

SMCS Code: 3258-025
Model: 450E Backhoe Loader
Warranty: Six Month



- Used for the disassembly and assembly of rear axle assembly

References
Service Manual, 450E Drive Train
KENR5485, Axle Disassembly and Assembly

Item	Part Number	Description	Use
		Service/Repair Parts	
1	299-4758	Driver Handle Assembly	Used with 299-4759
2	299-4759	Driver Plate	Used to install lip seal into rear axle
3	299-4760	Spanner Wrench Assembly	Used to remove and install outer wheel bearing retaining nut
4	299-4761	Brake Adjuster Driver Group	Used to install brake piston seals
5	308-8452	False Differential	Used to set pinion shim height on differentials

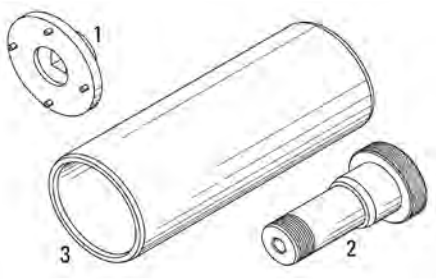
Differential Backlash Setting Tools for CS-663E, CP-663E, and CS-683E

Essential Tool

SMCS Code: 3254, 3258, 3260, 4084, 4321
Model: CS 663E (ASB1- Up, DAG1-Up), CP-663E (ASF1- Up, DAF1-Up), and CS -683E (ASG1-Up, DAD1-Up) Vibratory Soil Compactor
Warranty: Six Months

Reference
KENR3654, Disassembly and Assembly, CP-663E, CS-663E, and CS683E Vibratory Compactors Machine Systems

- Used to set pinion shim height on differentials
- Required for setting backlash of ring and pinion gears
- 283-3581 Spanner Wrench (3/4 inch square drive) used for disassembly and assembly without damage to components
- 283-3582 False Pinion used with nut and washer from differential



Item	Part Number	Description
1	283-3581	Spanner
2	283-3582	False Pinion
3	283-3583	False Differential

Pinion Nut Wrenches and False Pinion

Essential Tool

SMCS Code: 3258, 3254
Model: CS-533E (DAK, ASL, BZE), CP533E (ASM, DAM, BZG) CS- 563E (CNG, ASA), CP-563E (CNT, BWE) CS-573E (CNN, CEB) CS-583E (CNX, DAJ) Vibratory Compactors
Warranty: Six Months

263-2152 Spline Wrench

- Used to prevent axle from rotating during pinion nut removal
- Used with 263-2153 Spanner Wrench

263-2153 Spanner Wrench

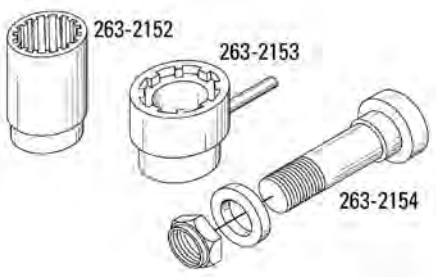
- Used to loosen and remove the pinion nut
- Used with 263-2152 Spline Wrench

263-2154 False Pinion

- Used to set bevel gear to pinion backlash

Reference

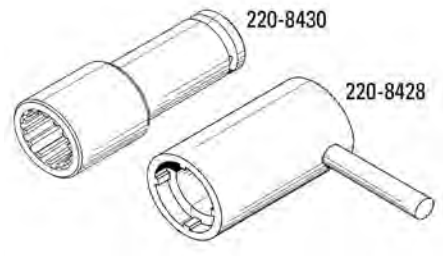
KENR3604, Vibratory Compactor, Machine Systems, Disassembly and Assembly



Part Number	Description
263-2152	Spline Wrench
263-2153	Spanner Wrench
263-2154	False Pinion

220-8428 Spanner Wrench, 220-8430 Pinion Wrench
Essential Tool

SMCS Code: 4084-017
Model: 902, 906, 908 Compact Wheel Loaders
Warranty: Six Months



- Used to install and remove drive axle bearing nut
- Use pinion wrench to prevent axle from rotating and tighten/loosen bearing nut using spanner wrench

Reference
902, 906, 908 Power Train Disassembly and Assembly Manuals

Part Number	Description
220-8428	Spanner Wrench
220-8430	Pinion Wrench

6V-3069 Alignment Tool

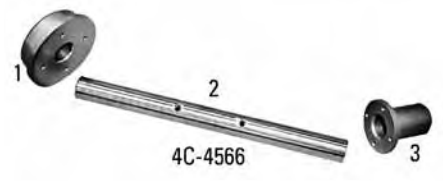
SMCS Code: 3253-010, 3120-010
Model: 621B Tractor, 45P-2134 and 35V-1074; 623B Tractor, 46P-1234; 627B Tractor, 14S838 and 15S-1122
Warranty: Six Months

- Used in assembly of drive shaft clutch
- Used with appropriate spider gear to align clutch discs before installation of output housing

Part Number	Description
6V-3069	Alignment Tool

4C-4562 Alignment Group
4C-4566 Alignment Group

SMCS Code: 3252-012, 3253-010
Model: See Below
Warranty: Six Months



- Alignment groups required for proper engine to transmission alignment, essential for reliable unishaft and component performance
- Single drive shaft (unishaft) is replacing multi-piece drive shafts (and couplings) on some tractor scraper models; unishaft has fewer parts and offers improved reliability and lower repair costs
- Lightweight, accurate and quick and easy to use
- Ensure trouble-free operation of components without damage
- 4C-4562 Alignment Group: 621E (6AB, 2PD), 623E (6CB, 6YF), 627E (6EB, 6GB)
- 4C-4566 Alignment Group: 631E (1AB 750 - UP), 637E (1FB 351 - UP, 1JB 557 - UP)
- The following models require 4C-4566 Alignment Group if drive shafts have been updated to include unishaft drive line; update detailed in SEHS8813-01 Special Instruction (12/88), 631D (24W), 631E (1AB1 - 749, 1NB, 3ND), 633D (25W), 637D (26W, 27W), 637E (1FB1 - 350, 1JB1 - 556), 639D (99X)

Item	Description
3	Sleeve

Item	Part Number	Description
1	4C-4567	Adapter
2	4C-4569	Shaft

Reference for Alignment Group

SEHS9138, Special Instruction

Item	Part Number	Description
1	4C-4563	Adapter
2	4C-4565	Shaft
3	4C-4564	Sleeve

176-7553 Alignment Group

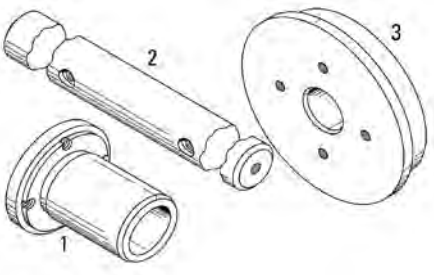
Essential Tool

SMCS Code: 3252-010, 3253
Model: 633E Scrapers with serial numbers: 2PS314-UP, 1AB1813-UP, 1NB1438, and 1FB759
Warranty: Six Months

- Used to properly align engine and transmission
- Easy-to-use, light-weight unit makes quick and accurate alignment possible
- Ensures trouble-free, reliable unishaft and component performance without damage

Reference

SEHS9138, Special Instruction



Part Number	Description
176-7553	Alignment Group

297-8326 Engine and Transmission Alignment Group

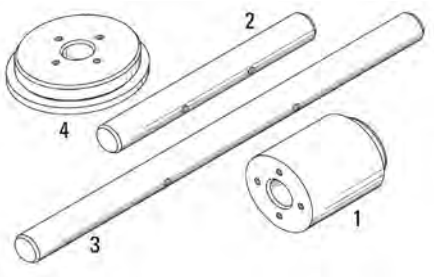
Essential Tool

SMCS Code: 3252-010; 3253
Model: 657G Wheel Tractor Scraper
Warranty: Six Months

- Used to properly align engine to transmission
- Easy to use, lightweight unit allows quick and accurate alignment
- Short shaft is used for front engine/transmission
- Long shaft is used for rear engine/transmission

Reference

RENR9714, Service Manual, 657G WTS Power Train Disassembly and Assembly, Remove and Install Engine.



Item	Part Number	Description
	Service/Repair Parts	
1	297-8327	Pilot Sleeve
2	297-8328	Pilot Shaft
3	297-8329	Pilot Shaft
4	297-8330	Pilot Adapter

1U-8814 Gauge Assembly
8T-3111 Ring Gear Installer

SMCS Code: 3258-025, 3260-017, 3278-010, 3280-012, 4084-010
Model: 416, 426, 428, 436
Warranty: Six Months

- Used in disassembly and assembly of rear drive axle
- 1U-8814 Gauge Assembly makes it possible to accurately measure gap between axle housing flange and inner brake housing to establish shim thickness for desired differential preload; without 1U-8814, accurate measurements very difficult to obtain, possibly impacting on quality of rebuild
- 8T-3111 Ring Gear Installer provides clean, stable way to remove axle planetary ring gear from axle housing and a flat surface to ensure proper installation of ring gear in axle housing

Part Number	Description
1U-8814	Gauge Assembly
8T-3111	Ring Gear Installer

4C-6985 Ring Gear Installer Group

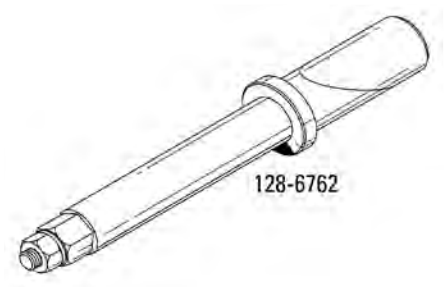
SMCS Code: 4084-010
Model: 446 (T448) Backhoe Loader
Warranty: Six Months

- Used to remove or install front drive ring gear faster and easier
- Can be used by 1 person, with minimal amount of hand tools
- Dimensions:
  228.6 mm (9.0 inches) square, 12.7 mm (0.50 inches) thick

Part Number	Description
4C-6985	Ring Gear Installer Group

128-6762 Rotation Shaft
128-6763 Lock Ring Compressor Assembly

SMCS Code: 4100-016 (128-6762), 4100-017 (128-6763)
Model: Challenger 35, 45, and 55 Agricultural Tractors
Warranty: Six Months



128-6762 Rotation Shaft

- Used to rotate bevel gear shaft when seating gears and bearings, and removing backlash from gear trains (inclined ends of tool expand as nut is tightened)
- Also used to check rolling torque, which is then used to determine proper shim adjustment
- Rotation tool fits into end of shaft providing most convenient method of rotating shaft (also reduces chance of shaft damage if trying to rotate shaft using hand tools)
- Minimum hole diameter in shaft: 49.1 mm (1.93 in)
- Overall length: 344.0 mm (13.5 in)

128-6763 Lock Ring Compressor Assembly

- Used to compress lock ring when removing and installing brake hub from planet carrier (tooling reduces possibilities of damage to lock ring and surrounding components)
- Provides the quickest and easiest method to compress brake hub lock ring

(Continued)

128-6762 Rotation Shaft (Continued)

128-6763 Lock Ring Compressor Assembly

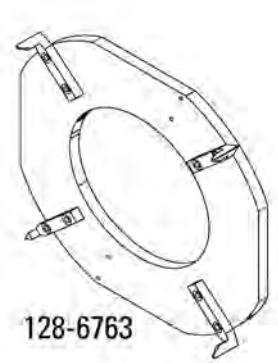
SMCS Code: 4100-016 (128-6762), 4100-017 (128-6763)
Model: Challenger 35, 45, and 55 Agricultural Tractors
Warranty: Six Months

- Allows one person to compress and hold lock ring during installation and removal procedure (one person installation of this lock ring is not possible using conventional installation techniques)
- Overall diameter: 230.0 mm (9.0 in)

Part Number	Description
128-6762	Rotation Shaft
128-6763	Lock Ring Compressor Assembly

Reference for 128-6762 Rotation Shaft

SENR8308, Service Manual; Challenger 35, 45, and 55 Agricultural Tractor Power Train Disassembly and Assembly



Puller Crossarm and Plate

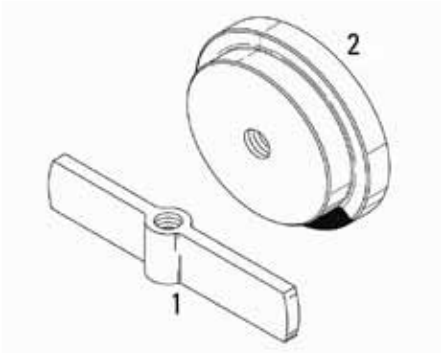
SMCS Code: 3030-015 (129-8122), 1151-017 (129-8123)
Model: Challenger 35, 45, and 55 Agricultural Tractors
Warranty: Six Months

129-8122 Puller Crossarm

- Used to remove various bearings and gears from countershaft transmission
- Used with 4C-5613 Puller Group (can be added to 4C-5613 as optional two-leg crossarm)
- Can be used for any general pulling application

129-8123 Puller Plate

- Used to remove and install rock shaft bushing on center housing cover assembly
- Used with any puller group using M16 x 2 threaded puller rods
- Using these puller plates, the bushings can be removed or installed without removing cover assembly (greatly reduces bushing replacement time)
- Puller plates pilot into bushings inside diameter (provides a positive fit and helps prevent slippage)
- 129-8123 Puller Plate is designed with stepped face to properly and accurately install bushing to correct depth



References

SENR8305, Service Manual; Challenger 35, 45, and 55 Agricultural Tractor Transmission Disassembly and Assembly
SENR8308, Service Manual; Challenger 35, 45, and 55 Agricultural Tractor Power Train Disassembly and Assembly

(Continued)

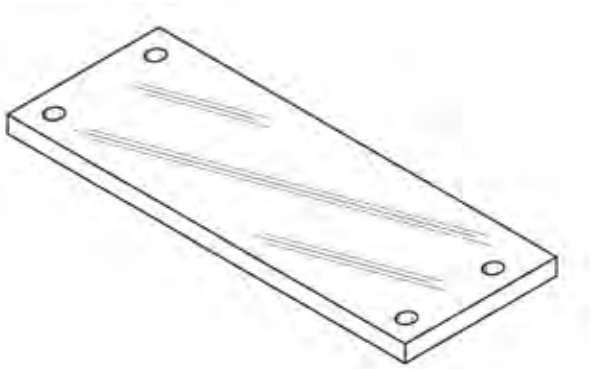
Puller Crossarm and Plate (Continued)

SMCS Code: 3030-015 (129-8122), 1151-017 (129-8123)
Model: Challenger 35, 45, and 55 Agricultural Tractors
Warranty: Six Months

Item	Part Number	Description	Length	Height	Thread Size	O.D.	Pilot Diameter
1	129-8122	Puller Crossarm	279 mm (11.0 in)	41 mm (1.6 in)	3/4 -12 ACME	--	--
2	129-8123	Puller Plate	--	--	M16 x 2	92.5 mm (3.64 in)	76.0 mm (2.99 in)

FT2517 Plate

SMCS Code: 4100-015
Model: Challenger 35, 45, and 55 Agricultural Tractors
Warranty: None



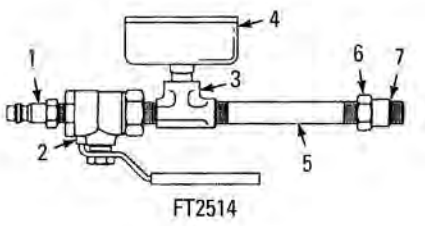
- Used to remove bearing from pinion shaft and bevel pinion from center housing
- Plate functions as a back plate when pressing pinion from shaft bearings
- Bolts directly to center housing using 8T-4184 Bolts and 8T-4223 Washers
- Material: SAE1018 steel

Reference

SENR8308, Service Manual, Challenger 35, 45, and 55 Agricultural Tractor Power Train Disassembly and Assembly

FT2514 Brake Gauge Assembly, FT2515 Guide Bolt FT2516 Adjustment Bolt

SMCS Code: 4100-015 and 4100-016 (FT2514), 4100-016 (FT2515) 3030-016 (FT2516)
Model: Challenger 35, 45, and 55 Agricultural Tractors
Warranty: None



FT2514

FT2514 Brake Gauge Assembly

- Used to apply air pressure to brake piston during disassembly and check for seal leakage during assembly
- Threaded adapter attaches directly to threaded hole in center housing — allows attachment of air supply to quick disconnect coupling on opposite end
- Pressure gauge allows mechanic to view the amount of pressure being put on brake piston
- Shutoff valve allows pressure to be applied slowly or bled off after disconnecting air supply
- Pressure range of gauge: 0 to 1100 kPa (0 to 160 PSI)

FT2515 Guide Bolt

- Used to align shim pack and ring gear with bolt holes (two guide bolts are required for this procedure)
- Using guide bolts will make sure shims are correctly aligned (also helps prevent shim damage by not allowing shims to slip out of position)
- Guide bolt can be made from an 8T-0643 Bolt
- Optional screw driver slot can be machined into guide bolt for easier installation and removal

(Continued)

FT2514 Brake Gauge Assembly, FT2515 Guide Bolt (Continued)
FT2516 Adjustment Bolt

SMCS Code: 4100-015 and 4100-016 (FT2514), 4100-016 (FT2515) 3030-016 (FT2516)
Model: Challenger 35, 45, and 55 Agricultural Tractors
Warranty: None

FT2516 Adjustment Bolt

- Used to lift transmission shafts when checking end play clearance (this determines how much shim pack is required for proper end play adjustment)

References

SENR8305, Service Manual; Challenger 35, 45, and 55 Agricultural Tractor Transmission Disassembly and Assembly
SENR8308, Service Manual; Challenger 35, 45, and 55 Agricultural Tractor Power Train Disassembly and Assembly

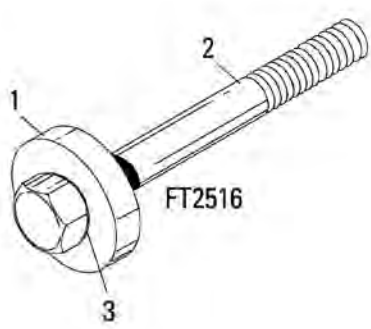
Item	Part Number	Description
1	1U-7721	Quick Disconnect Coupler
2	4C-7090	Valve
3	2D-7325	Pipe Tee
4	8T-5224	Pressure Gauge
5	3B-7273	Pipe Nipple
6	5P-3501	Adapter, 9/16 in-18 SAE external to 1/4 in-18 NPTF internal
7	3J-1907	O-ring Seal for 5P-9617 Adapter

FT2515 Guide Bolt

FT2516 Adjustment Bolt

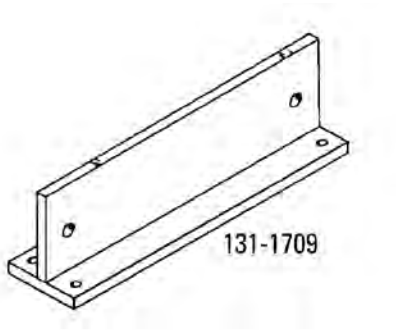
Item	Description
3	Weld Location

Item	Part Number	Description
1	1D-4539	Bolt
2	7X-0503	Hard Washer



131-1709 Crossblock Puller

SMCS Code: 4313-017 (131-1709); 4198-010
Model: Challenger 35, 45, and 55
Warranty: Six Months



131-1709 Crossblock Puller

- Used to remove axle and bearing from axle housing
- Used with hydraulic cylinder, four 7X-0364 Bolts, four 7X-0448 Nuts, and four dealer-manufactured spacers
- Puller bolts mount into holes in axle housing
- Made from high-strength alloy steel

References

SENR8308, Service Manual; Challenger 35, 45, and 55 Agricultural Tractor Power Train Disassembly and Assembly
SENR8312, Service Manual; Challenger 35, 45, and 55 AgriculturalTractor Machine Systems Disassembly and Assembly

131-1709 Crossblock Puller	
Overall size (WxLxH)	152.4 x 546.2 x 171.5 mm (6.00 x 21.50 x 6.75 in)
Weight	25 kg (55 lb)
Distance (long) between bolt holes	498.2 mm (19.6 in)
Distance (short) between bolt holes	99.1 mm (3.9 in)
Spacer (dealer manufactured)	19.05 mm (3/4 in) black pipe
Spacer length	114.3 mm (4.50 in)

Part Number	Description
131-1709	Crossblock Puller

131-1710 Hub Bearing Spacer Set

131-1710 Hub Bearing Spacer Set

- Used to maintain position of duo-cone seal between drive wheel hub and reaction arm hub when removing undercarriage (one set of two required for this procedure)
- Provides fast and effective way to prevent misalignment of seal which results in leakage of bearing lubricant
- Used with two cable ties to hold spacer set in position

131-1710 Hub Bearing Spacer Set	
Inside diameter	257 mm (10.1 in)

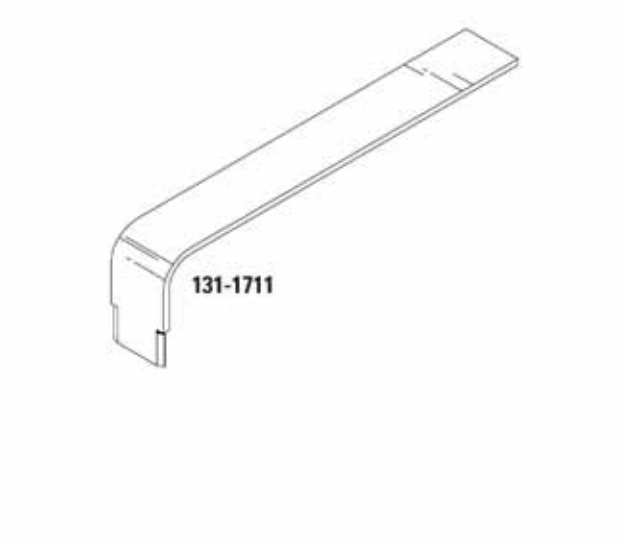
Part Number	Description
131-1710	Hub Bearing Spacer Set

131-1711 Pump Drive Alignment Tool

131-1711 Pump Drive Alignment Tool

- Used to align pump drive group with pump drive gear
- Tool engages gear splines to rotate gear until gear teeth on pump drive are aligned

131-1711 Pump Drive Alignment Tool	
Overall length	254 mm (10.0 in)
Width across teeth	35.0 mm (1.38 in)



Part Number	Description
131-1711	Pump Drive Alignment Tool

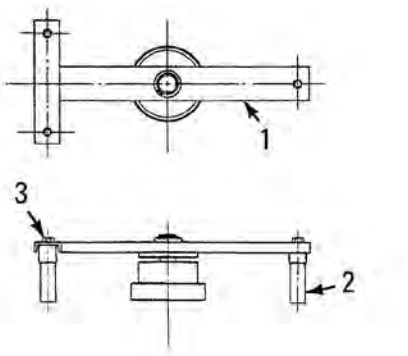
4C-3391 Spacer Legs

SMCS Code: 3250-017
Model: 446 Backhoe Loader
Warranty: Six Months

- Used with 1U-8814 Gauge Assembly for disassembly and assembly of rear drive axle
- 1U-8814 Gauge Assembly is current tool for 416, 426, 428, 436, and 438 Backhoe rear axle bearing adjustment; installing three 4C-3391 Spacer Legs using three 1H-5514 Bolts to 1U-8814 Gauge Assembly will satisfy Model 446 Backhoe requirements
- 1U-8814 with attached 4C-3391 Spacer Legs is essential tool to properly adjust Model 446 Backhoe Loader rear axle bearings

Reference

446 Service Manual



Item	Part Number	Description	Detail
1	1U-8814	Gauge Assembly	--
2[1]	4C-3391	Spacer Leg	--
3[1]	1H-5514	Bolt	5/16 - 18 thread

[1] Not included with 1U-8814

6V-0005 Locknut Spanner Wrench

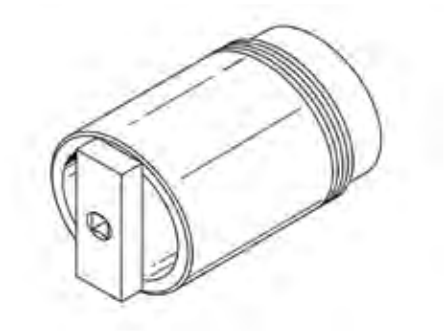
SMCS Code: 3258-017
Model: 992C Wheel Loader
Warranty: Six Months

- 12.7 mm (0.50 in) square drive tool used to remove and install 5L-8079 Locknuts in both front and rear bevel gear groups; locknuts retain bevel gear within its bearings

Part Number	Description
6V-0005	Locknut Spanner Wrench

PTO Seal Locator

SMCS Code: 5237-010, 0745
Model: Challenger 35, 45, and 55 Agricultural Tractors
Warranty: Six Months



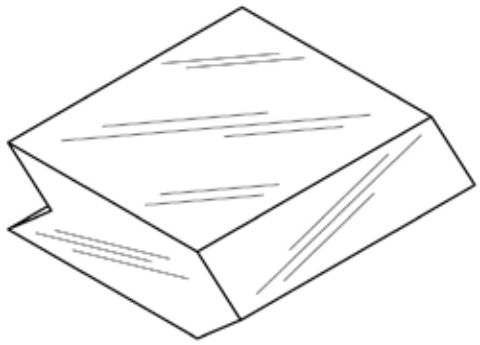
- Used to hold seal in position when assembling retainer over PTO shaft and maintains correct seal depth and squareness during retainer assembly
- Used with 137-3482 Seal Installer
- Installer is threaded into seal retainer for positive engagement and squareness

Reference
SENR8308, Service Manual; Disassembly and Assembly, Challenger 35, 45, and 55 Agricultural Tractors, Power Train

Part Number	Description	Length	Outside Diameter	Square Drive
137-3483	Seal Installer, PTO Shaft	149.7 mm (5.89 in)	88.9 mm (3.50 in)	1/2 in

FT0627 Spacer

SMCS Code: 3258-017
Model: D4 Tractor, 951 Traxcavator
Warranty: None



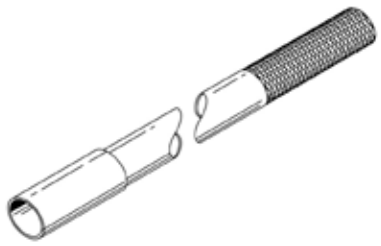
- Used with existing tooling for removing bearing next to bevel gear (4 required)
- Material: SAE1018 steel

5P-7373 Axle Installer

SMCS Code: 3250-010
Model: 666B Tractor-Scraper; 769B, 773 and 777 Trucks; 992B Wheel Loader; 631D Tractor-Scraper
Warranty: Six Months

Part Number	Description
5P-7373	Axle Installer

- Makes axle installation much easier
- Slides over end of any axle [not exceeding 82.6 mm (3.25 in) diameter] and lifts inboard end to engage differential output spline



142-1813 Axle Installation Tool

SMCS Code: 3250-010, 0722
Model: 777D Off-Highway Trucks
Warranty: Six Months

- Used to make removal and installation of axle shafts easier and also helps prevent accidental hand pinching by keeping technicians hands out of planet carrier assembly
- Tool has a knurled handle for better gripping
- Can be used on other axles that have 1/2 - 13 threaded hole

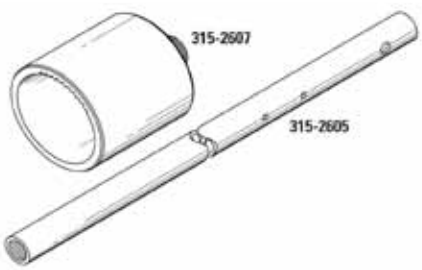
Overall length	945.7 mm (37.2 in)
Diameter	76.2 mm (3.00 in)
Thread size	1/2 - 13

Part Number	Description
142-1813	Axle Installation Tool

315-2605 Axle Handle, 315-2607 Adapter Assembly Essential Tool

SMCS Code: 3278-011
Model: 795F AC Off-Highway Truck
Warranty: Six Months

- Used to remove and install axle shaft on drive axle
- Used with suitable overhead lifting device to support axle shaft
- Adapter slips over outer splines of axle shaft
- Internal allen head bolt threads into end of axle shaft to secure adapter
- Internal allen head bolt is captured in adapter with a retaining ring to prevent loss
- Handle threads onto adapter boss to provide a lifting point for supporting axle and provide leverage to guide axle shaft during removal and installation
- Through holes in handle allow a bar to be inserted to remove or install adapter
- Handle holes also allow a bar to be inserted so tooling can be used to rotate axle shaft and align splines during assembly



Reference

KENR8715, 795F AC Off-Highway Truck, Disassembly and Assembly, Power Train, Axle Shaft Remove and Install

(Continued)

315-2605 Axle Handle, 315-2607 Adapter Assembly (Continued)

Essential Tool

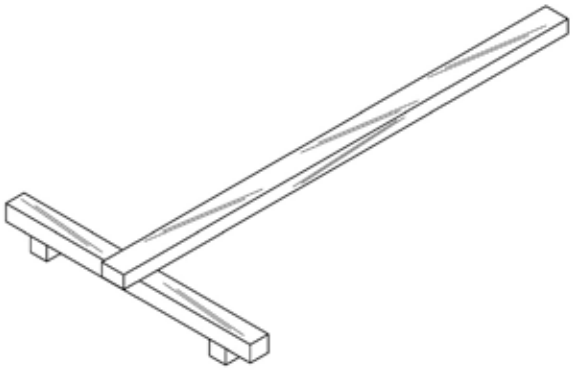
SMCS Code: 3278-011
Model: 795F AC Off-Highway Truck
Warranty: Six Months

315-2605 Handle	
Overall length	1825 mm (71.8 in)
Outside diameter	63.5 mm (2.50 in)
Internal threads	2-12
315-2607 Adapter	
Overall length	214 mm (8.4 in)
Outside diameter	178 mm (7.0 in)
External threads	2-12
Internal shoulder bolt	1/2-13
Number of teeth	10

Part Number	Description
315-2605	Axle Handle
315-2607	Adapter Assembly

FT1449 Turning Tool

SMCS Code: 3250-025
Model: 772, 772B Tractors and 773, 773B Trucks
Warranty: None



- Designed to engage lugs of adjusting rings in sides of differential carrier
- Adjusting rings control bearing preload and bevel gear backlash

4C-8154 Axle Installer
4C-6408 Axle Support

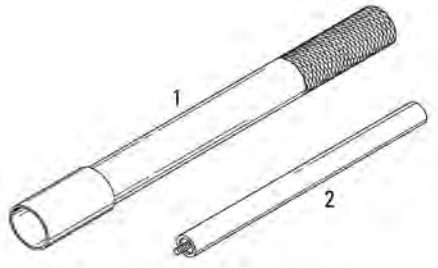
SMCS Code: 3259-010, 4056-010
Model: 990 Wheel Loader
Warranty: Six Months

4C-8154 Axle Installer

- Used to install drive axles into final drive assembly
- Tool slides over end of axle [not to exceed 92.5 mm (3.64 in)] and helps lift inboard end to engage drive spline
- Knurled hand grip provides better control

4C-6408 Axle Support

- Used to support axle when removing or installing sun gear in final drive
- Used with hoist and sling, if necessary, to support tool and axle



Item	Part Number	Description	Overall Length	I.D.	O.D.	Thread
1	4C-8154	Axle Installer	800 mm (31.50 in)	88.9 mm (3.50 in)	--	--
2	4C-6408	Axle Support	610 mm (24.02 in)	--	50.8 mm (2.00 in)	1/2 - 13

Step Plates

SMCS Code: 3280-017
Model: 777 Truck, 776 Tractor
Warranty: Six Months

- Used in disassembly and assembly of 2G-0135 Differential and Bevel Gear Group

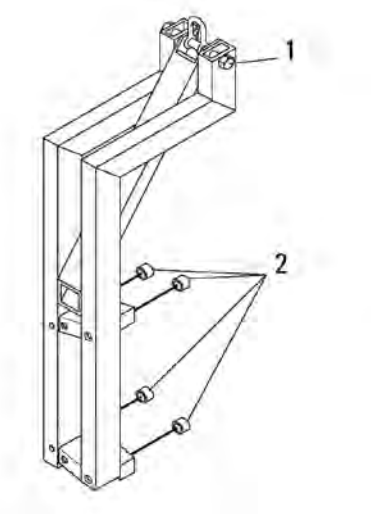
Item	Description	Use
2	Step Plate	Differential housing bearing removal

Item	Part Number	Description	Use
1	5P-7377	Step Plate	Input pinion front bearing cone removal
3	5P-7379	Step Installer	Input pinion phenolic oil seal installation

Step Installer

132-1203 Lifting Bracket Assembly

SMCS Code: 3258-010
Model: 777 Truck
Warranty: Six Months



- Bolted to face of input pinion bearing cage by replacing 4 bolts which fasten bearing cage to carrier assembly with four longer 8F-8804 Bolts and four 4B-4280 Washers (both required)
- Used in removal and installation of 104-9410 Differential and Bevel Gear Group (also requires four 311-0034 Adapters)
- Used in removal and installation of current 5T-4282 Differential and Bevel Gear Group and previous 9D-2315 Differential and Bevel Gear Group
- Spacers come with newly purchased kit but are serviced separately for updating older tooling
- When using the lifting bracket assembly with the adapters you must use four 7X-0340 bolts

Working load limit	1,814 kg (4000 lb)

Item	Part Number	Description	Qty.
1	5D-9514	Bolt	1
2	311-0034	Adapter	4
Not Shown			
--	3K-2889	Locknut	--

8T-2843 Pinion Nut Spanner Wrench

SMCS Code: 3250-010, 3250-017
Model: 776, 777, 777B, 793
Warranty: Six Months

- Used to remove and install 2F-9064 Nut on differential pinion

Part Number	Description
8T-2843	Pinion Nut Spanner Wrench

FT1866 Staking Tool, FT1867 Bevel Gear Nut Spanner Wrench FT1870 Adapter Assembly

SMCS Code: 3258-017, 3280-012
Model: IT18B, IT28, 508, 613C, 916, 926, 926E, 936, 936E
Warranty: None

- Used to service differential and bevel gear groups for 926 and 936 Wheel Loaders

143-4987 Adapter Lifting Bracket Assembly

SMCS Code: 3816-010
Model: 769 Through 777 Off-Highway Trucks
Warranty: Six Months

European Union compliant, CE marked

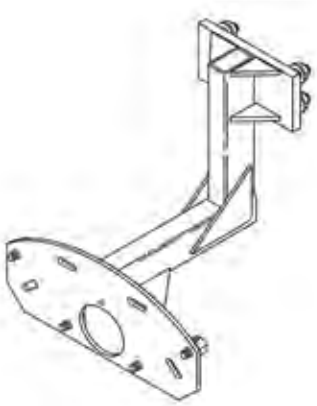
- Used to remove and install planet carrier assembly while rear wheel station is in the horizontal orientation (even when attached to truck)
- Used with 128-4775 Lifting Bracket Assembly
- Multiple hole patterns make tool versatile enough to use on 769 through 777 series trucks

References

SENR3145, 776C Tractor and 777C Truck Power Train
SENR6858, 772B Tractor and 773B Truck and 775B Truck Power Train
SENR6853, 768C Tractor and 769C Truck Power Train

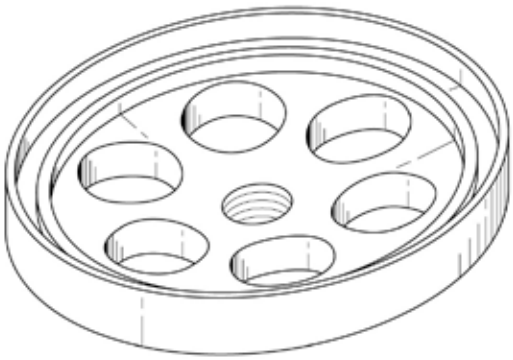
Working load limit	363 kg (800 lb)

Part Number	Description
143-4987	Adapter Lifting Bracket Assembly



FT1108 Seal Installer

SMCS Code: 3258-012, 3258-017
Model: 772B, 773B
Warranty: None



- Used to install 7D-4891 Seal in differential carrier assembly

183-4807 Differential Lifting Bracket

SMCS Code: 3258-009, 3258-010, 3258-017
Model: 772B, 773
Warranty: Six Months

- Used to remove and install differential and carrier assembly without disturbing brake lines

Capacity	2043 kg (4500 lb)

Part Number	Description
183-4807	Differential Lifting Bracket

125-9612 Lifting Bracket

SMCS Code: 3258-010
Model: All H Series Motor Graders, Except 14H and 16H
Warranty: Six Months

- Used to remove and install differential (two different types of lifting brackets allow user to choose method that best fits their need or preferred method)
- Differential removal and installation without one of these lifting devices is very difficult and could result in damage to differential and surrounding components
- Using proper tooling will reduce the potential of injury to the mechanic rather than using unsafe alternative removal and installation methods

125-9612 Lifting Bracket

- Used to remove and install differential from above (preferred method for field service applications or when floor or ground surface will not permit use of a floor jack)
- Used with an overhead hoist
- Hoist can be attached in one of five lifting holes to obtain the best center of gravity
- Lifting bracket is secured to differential with 9S-1374 Bolt (1/2-13) and 5P-8245 Washer for 8W-5575 Differential on 120H and 135H Motor Graders

(Continued)

125-9612 Lifting Bracket (Continued)

SMCS Code: 3258-010
Model: All H Series Motor Graders, Except 14H and 16H
Warranty: Six Months

- Lifting bracket is secured to differential with 1B-7709 Bolt (5/8-11) and 5P-8247 Washer for 8W-5430 Differential on 12H, 140H, and 160H Motor Graders

Reference
Service Manual Module

Part No.	Description	Max. Capacity	Tube Diameter	Width	Height	Hole for Hoist Attachment	Pin	Lock Pin
125-9612	Lifting Bracket	227 kg (500 lb)	76.2 mm (3 in)	813 mm (32.0 in)	1804 mm (71.0 in)	25 mm (1.0 in) diameter	9K-4257	8S-6377

4C-8148 Fixture

Warranty: Six Months

4C-8148 Fixture

- Used to remove and install differential from underneath motor grader
- Used with a floor jack similar to a 1U-7505 Mobil Low Lift Transmission Jack, 1U-9752 Mechanical Transmission Jack and a smooth surface floor (make sure capacity of floor jack is rated above weight of differential)
- Fixture is designed as a dual purpose tool for removal and installation and can also be used to hold differential during disassembly and assembly

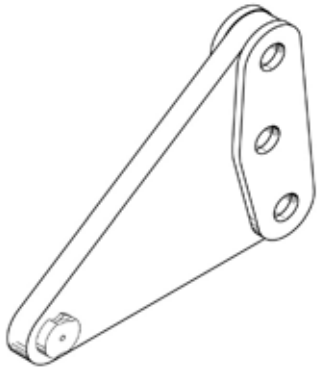
4C-8148 Fixture mounted to a typical floor jack		Overall Size:		
Part Number	Description	Width	Length	Height
4C-8148	Fixture	460 mm (18.1 in)	560 mm (22 in)	612 mm (24.0 in)

FT2782 Alignment Plate Assembly

SMCS Code: 6313-024, 6313-064
Model: 120H and 135H Motor Graders
Warranty: None

- Used to field install a ripper on a motor grader
- Quickly and accurately positions location of hole (3 mm [0.12 in] pilot hole is drilled into side plate of differential case)
- Existing motor graders must have a 51.1 ± 0.1 mm hole to accept field installed ripper linkage
- Differential housing bolts are used to mount plate assembly
- Drill bushing: 64-3758
- Material: SAE 1020 steel

Reference
Service Magazine Article



Ring Nut Spanner Wrenches

SMCS Code: 3250-010, 3250-017
Model: 631D, 633D, 637D, 651E, 657E, 772B, 773B, 776, 777, 777B
Warranty: None

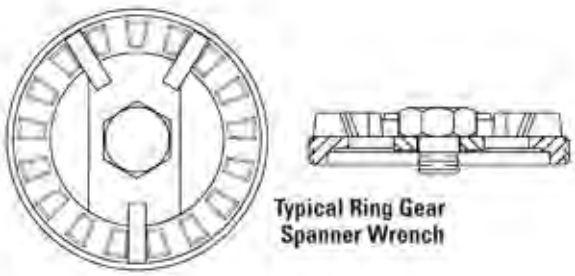
- Can be used as replacements for FT1449 Spanner Wrench to provide more positive engagement with 3D-9553 and 6D-2546 Ring Nuts during adjustment of differential and bevel gear bearing
- FT1898 Ring Nut Spanner Wrench used to tighten or loosen discontinued 6D-2646 Ring Nut; slots in discontinued 6D-2646 Nut are too narrow to allow duplicate nut to be fabricated into spanner wrench
- FT1899 Ring Nut Spanner Wrench has two options when used to tighten or loosen 3D-9552 Ring Nut; if spare 3D-9552 Ring Nut is available, fabricated tool shown on left applies (see photo); if spare not available, fabricated tool similar to FT1898 applies

FT1898

FT1899

Ring Gear Spanner Wrenches

SMCS Code: 3257-025
Model: CS431C and PS/PF300B Compactors
Warranty: None



Typical Ring Gear Spanner Wrench

FT2524 Ring Gear Spanner Wrench

- Used to make backlash adjustments easier on differential ring gears of CS-431C Compactors
- Used with 1 1/8 inch socket and ratchet on 119-4666 Nut
- Material: SAE1018 steel
- Tool can also be made using another 119-4666 Nut (teeth will mate together when nuts are reversed)
- Requires a 7H-2069 Bolt

FT2525 Ring Gear Spanner Wrench

- Used to make backlash adjustments easier on differential ring gears of PS/PF300B Compactors
- Used with 1 1/8 inch socket and ratchet on 1G-2516 Nut
- Material: SAE1018 steel
- Use a 1G-2516 Nut as a template to locate three teeth of spanner wrench
- Requires a 7H-2069 Bolt

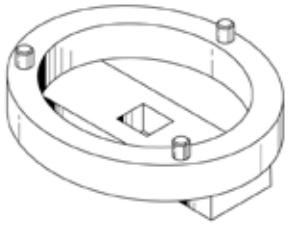
251-4365 Spanner Wrench Assembly
Essential Tool

SMCS Code: 3258-017
Model: M325C Wheeled Material Handler with 36 Ton Axles
Warranty: Six Months

Part Number	Description
251-4365	Spanner Wrench Assembly

- Used to remove and install outer axle nut
- Used with 3/4 inch square drive ratchet or torque wrench
- Required to obtain correct nut torque during assembly procedure
- Pins can be serviced using 6V-3535 Dowels

Reference
RENR7164, M325C Material Handler Service Manual, Disassembly and Assembly (36 Ton Axle)

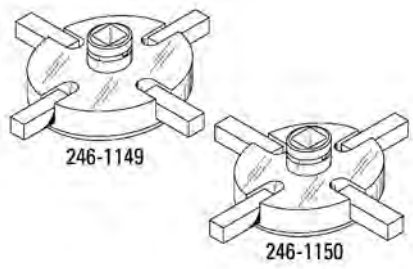


246-1149 Spanner Wrench Assembly, 246-1150 Spanner Wrench Assembly
Essential Tool

SMCS Code: 3258-017
Model: M325C Material Handler Excavator
Warranty: Six Months

- Used to make backlash adjustments on differential ring gear
- Used with a 1/2 inch square drive ratchet

Reference
SENR7164, M325C Material Handler Service Manual, Power Train Disassembly and Assembly



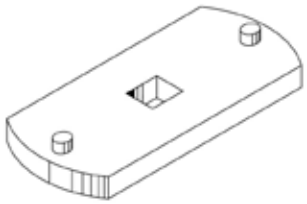
Part No.	Description	Number of Teeth	Tooth Width	Outside Diameter	Center Guide Diameter
246-1149	Spanner Wrench Assembly	4	10 mm (0.39 in)	120 mm (4.72 in)	90 mm (3.54 in)
246-1150	Spanner Wrench Assembly	4	10 mm (0.39 in)	120 mm (4.72 in)	80 mm (3.15 in)

202-7965 Gear and Pinion Spanner Wrench
Essential Tool

SMCS Code: 3257-025
Model: TH103
Warranty: Six Months

Part Number	Description
202-7965	Gear and Pinion Spanner Wrench

- Used to adjust backlash on differential ring gear and pinion
- Used with 1/2 inch square drive ratchet
- Provides positive engagement with adjusting nut
- Makes adjustment procedure easier
- Center distance between pins: 81 mm (3.19 in)
- Pin diameter: 6.35 mm (0.250 in)



Adjusting Ring Spanner Wrenches

SMCS Code: 3258-017
Model: 834B Wheel Tractor, 836 Landfill Compactor, and 988F Wheel Loader
Warranty: Six Months

Typical Adjusting Ring Spanner Wrench

- Used to disassemble and assemble 5K-3559, 8R-2857, and 8R-2861 Adjusting Rings
- Adjustment of rings can be difficult and time consuming without proper tools -- spanner wrench provides positive engagement for this operation
- Wrenches have 33.34 mm (1 5/16 in) hex for rotating and measuring torque

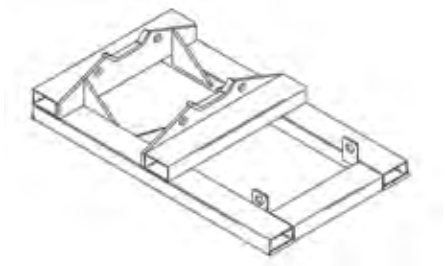
Reference

SENR5729, Service Manual, 988F Vehicle Systems Disassembly and Assembly

Part No.	Pilot	Adjusting Ring	Model
9U-7398	126 mm (4.96 in)	8R-2857	834B, 836, and 988F models
9U-7399	147 mm (5.79 in)	8R-2861	834B, 836, and 988F models

192-6402 Articulated Truck Front Axle Support Assembly

SMCS Code: 3260-010
Model: D250, D300, D350, and D400 All Models
Warranty: Six Months



European Union compliant, CE marked

- Used to easily install and remove front, center and rear axles
- Used with a lift truck
- Support assembly can be lifted from end or side
- Also used for work stand for some types of axle repair

Fork pocket openings (H x W)	152 x 254 mm (6.0 in x 10.0 in)
Fork spacing (center-to-center)	119 cm (47.0 in)
Maximum load limit	6804 kg (15,000 lb)
Overall size	142 x 244 cm (56.0 x 96.0 in)

Part Number	Description
192-6402	Articulated Truck Front Axle Support Assembly

994 Wheel Loader Tools

SMCS Code: 0601, 0602, 0671; 3258-017, 3260-010, 3271-017, 5102-010, 5104-010, 6101-010, 6107-010, 7054-010, 7252-010, 7253-010, 7302-010, 7323-010
Model: 994 Wheel Loader
Warranty: Six Months

- Used to remove and install axle, remove and install fender/cab/platform, disassemble and assemble transaxle/support, disassemble and assemble differential, general usage

References

SENR4740, 994 Service Manual
SENR4747, 994 Power Train Disassembly and Assembly
SENR4755, 994 Vehicle Systems Disassembly and Assembly
SEHS9272, 994 Field Assembly

994 Differential Disassemble and Assemble Tools and Axle Remove and Install Brackets

FT2379 Nut Holding Plate (Item 1)
FT2378 Yoke Adapter Plate (Item 2)

- Used, along with existing 8R-8517 Yoke Assembly from the 994 drive shaft, to disassemble and assemble pinion shaft and nut, as well as to tighten nut to obtain proper pinion rolling torque
- Hex nut on FT2378 Plate allows use of 2 3/4 inch socket for removal and installation, as well as for torque measurement

FT2381 Spanner Wrench (Item 3)
FT2380 Spanner Wrench (Item 4)

- Used to remove and install, as well as to adjust two differential adjusting rings when setting backlash and spreading differential to preload bearings
- 1 1/2 inch hex drive

8X-7723 Lifting Bracket (Item 5)

- Shipped with each vehicle and used during initial assembly
- Attaches to five wheel studs on final drive; convenient tool when required for final drives or axle assembly

Torque Adapter Wrenches and Socket

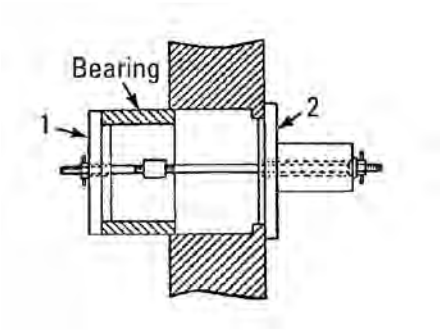
4C-9565, 262-2759 and 4C-9563 Torque Adapter Wrenches

- Used to torque bolts in locations that are difficult or impossible to access with socket and torque multiplier
- Used with the torque wrench extension set shown in Torquing Tools section
- Heavy-duty 12-point box end
- Capacity: 884 N•m (650 ft-lb)

NOTICE
These wrenches assure that the mounting bolts are properly torqued during assembly. Improperly torqued bolts can work loose, causing loss or damage of components.

Item	Part No.	Description	Size	Use
1	4C-9565	Torque Adapter Wrench	36 mm	Rear cab resilient mounts
2	262-2759	Torque Adapter Wrench	30 mm	Rear fender mounting bolts
3	4C-9563	Torque Adapter Wrench	24 mm	With various cab, rails and platform mountings on 994
Not shown	4C-9748	Socket	55 mm (2 3/16 in), 1 in drive, deep well, impact	Front axle mounting bolts

994 Oscillating Axle Bearing Tools



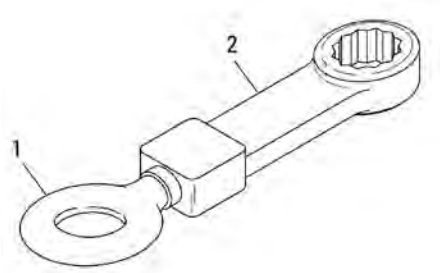
FT2376 Puller Plate (Item 1)
FT2377 Reaction Plate (Item 2)

- Required for installation of bearings in front and rear supports of 994 oscillating axle
- Provides constant pressure without damage during installation
- Used with other tools shown in SENR4747 Power Train disassembly and assembly

Item	Part Number	Description
1	FT2376	Puller Plate
2	FT2377	Reaction Plate

FT2679 Wrench Assembly

SMCS Code: 1000-011, 1000-012
Model: 994D Wheel Loader
Warranty: None



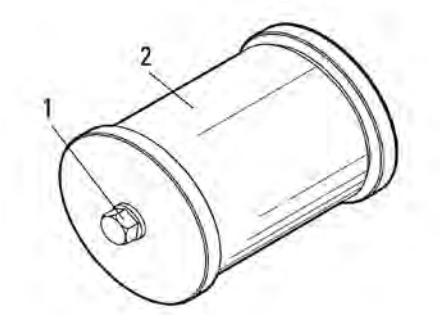
- Used to remove and install engine mount bolts
- Fits into limited clearance around bolt heads where sockets and other tools will not fit
- Made from standard Cat® parts
- Socket: 1 1/2 inch, 12 point
- Overall length: 280 mm (11 in)

Reference
RENR2018, Disassembly and Assembly for 994D Wheel Loader, Engine Supplement

Item	Part No.	Description
1	3L-9168	Eyebolt
2	5P-7320	Wrench

177-3602 Centering Shaft Group Essential Tool

SMCS Code: 3075-016
Model: 994D Wheel Loader
Warranty: Six Months



- Used to align shaft bearings on output transfer gear box during bearing preload procedure
- Allows selection of shim pack for bearing preload without pressing bearings onto shaft
- Saves time and prevents possible damage to bearings
- Outside tube diameter: 114.25 mm (4.498 in)
- Overall length: 157.4 mm (6.197 in)

Reference
RENR2034, Disassembly for 994D Wheel Loader, Power Train

Item	Description
2	Center tube and end caps

Item	Part Number	Description
1	1A-7669	Bolt
1	5P-8245	Hard Washer (fork mounting hardware)
1	1F-7958	Full Nut (1/2-13)
--	177-3602	Centering Shaft Group

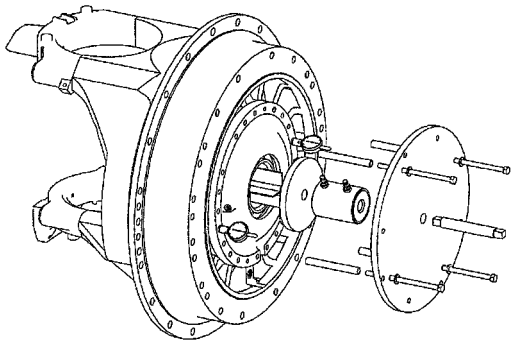
FT2546 Bearing Preload Tool

SMCS Code: 3254-025
Model: 785, 789 and 793 Off-Highway Trucks
Warranty: None

- Used to adjust pinion bearing preload using improved pinion tightening procedure (works on all 3 models)
- New procedure will improve bearing life

Reference

SEPD0361, Service Magazine Article, May 19, 1997, Pages 38-43 for Complete Listing of Associated Part Numbers Required to Perform Bearing Preload Procedure



220-0196 Seal Alignment Guide

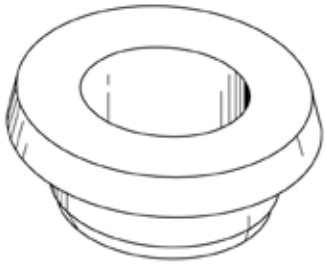
SMCS Code: 3258-016
Model: 789C and 793C Off-Highway Trucks
Warranty: Six Months

Part Number	Description
220-0196	Seal Alignment Guide

- Used to guide bearing cage assembly onto pinion shaft
- Protects edges of 9X-7397 Seal Assembly during assembly

Reference

Service Manual, Disassembly and Assembly, 793C and 789C Off-Highway Truck Power Train, Differential, and Bevel Gear Assembly



294-2619 Alignment Pin Assembly Essential Tool

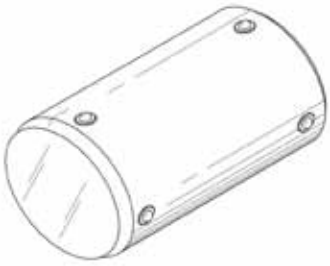
SMCS Code: 3260-010
Model: 770, BZZ1-Up, 772, RLB1-Up, 773F, EED1-Up, 775F DLS1-Up Off-Highway Truck
Warranty: Six Months

Part Number	Description
294-2619	Alignment Pin Assembly

- Used to align A-frame to frame assembly prior to positioning A-frame pin
- Eight spring-loaded balls secure pin in position
- Pin diameter: 99.9 mm (3.93 in)
- Material: lightweight nylon

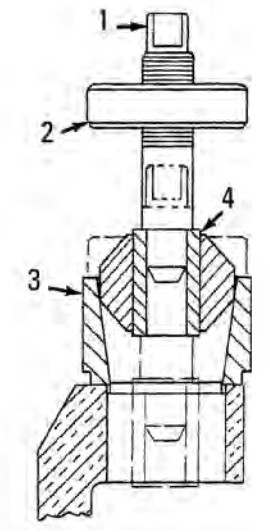
Reference

Service Manuals, Disassembly and Assembly 770, 772, 773F, 775F Off-Highway Truck



1U-6682 Installer Group

SMCS Code: 3250-039
Model: 657E Scrapers and Coal Haulers
Warranty: Six Months



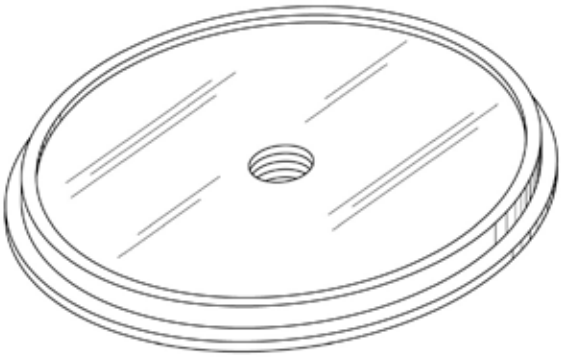
- Using this tool, drive shafts on 657E Scrapers and Coal Haulers with worn or damaged shock mounts can be repaired instead of being replaced
- 1U-6682 used to press new 9D-5494 Shock Mounts into drive shaft flange
- Repair can be done for about 25% of cost of replacing drive shaft
- There are 8 shock mounts installed in flanges at both ends of 8W-3161 Shaft, part of 8W-3160 Shaft Assembly; shock mounts should be lubricated with 5P-3975 Rubber Lubricant at installation; threaded 1U-6542 Collar can be adjusted to position shock mounts at proper depth inside flange; force of approximately 4450 N (1000 lb) necessary to press 9D-5494 into 8W-3161 flange

Item	Description
1	Pilot Screw
3	Pilot Guide

Item	Part Number	Description
2	1U-6682	Adjustable Collar
4	9D-5494	Shock Mount

FT2241 Bevel Pinion Seal Driver

SMCS Code: 3280-012, 3280-017
Model: 789 Off-Highway Truck
Warranty: None



- Used with FT0514 Handle to install spiral bevel pinion seal on differentials; places 5T-5979 Seal into 8T-5429 Bearing Cage Assembly; bearing cage assembly supports and seals spiral bevel pinion in differential and bevel gear group
- Except for its larger diameter, FT2241 is similar to FT1212 used on spiral bevel pinion seal on 785 Off-Highway Truck differentials

183-7243 Pinion Set Gauge
Essential Tool

SMCS Code: 3258-017
Model: TH62, TH63, TH82, and TH83 Telescopic Material Handlers
Warranty: Six Months

- Used to quickly and accurately make bevel pinion shim adjustments
- Improves quality of rebuild and reduces differential repair time
- Reduces time by eliminating installation of bevel gears to determine if shim settings are correct
- Helps increase component life by making bevel gear contact pattern more accurate

Part Number	Description
183-7243	Pinion Set Gauge

1U-5716 Pinion Lock Assembly

SMCS Code: 3280-025, 3280-036
Model: 785 and 789 Off-Highway Trucks
Warranty: Six Months

Part Number	Description
1U-5716	Pinion Lock Assembly

- Used to simplify backlash adjustment of differential bevel gears
- Adjustment easily made by one serviceman with 1U-5716 holding pinion stationary
- Sliding block end clamps internal spline portion of pinion; fastening 1U-5716 arm to mounting flange stud on differential housing secures pinion in place

Pinion Tools

SMCS Code: 3258-015, 3258-016, 3258-017
Model: TH62, TH63, TH82, and TH83 Telescopic Material Handler
Warranty: Six Months

125-9786 Pinion Depth and Preload Setting Tool

- Used to adjust pinion bearing preload and set pinion depth
- These tools are essential to correctly set the differential
- Included in tool group are 5P-4907 Socket Head Set Screw (qty. 1), 5L-8894 Socket Head Cap Screw (qty. 1), and 1T-0131 Bolt (qty. 2)
- Used with 183-7243 Pinion Set Gauge

125-9787 Pinion Nut Spanner Wrench

- Used to remove and install pinion ring nut
- 4 teeth engage in slots of nut for positive location and to help prevent damage caused by tool slippage
- Heat-treated for added strength and durability

(Continued)

Pinion Tools (Continued)

SMCS Code: 3258-015, 3258-016, 3258-017
Model: TH62, TH63, TH82, and TH83 Telescopic Material Handler
Warranty: Six Months

125-9789 Spline Wrench (Pinion Shaft)

- Used to prevent rotation of pinion shaft while removing or installing pinion ring nut (spline damage may be caused if other conventional hand tools are used to hold shaft in place)
- Has 3/4 inch square drive
- Wrench is designed to engage spline of pinion shaft

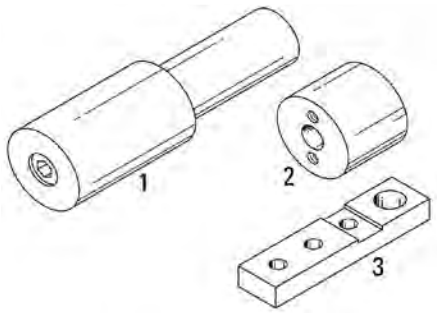
150-1716 Ring Nut Spanner Wrench

- Used to quickly and easily remove, install, or adjust ring nut
- Has 15/16 inch square drive
- Wrench allows ring nut to be adjusted to achieve correct rolling torque and backlash adjustments
- 4-tooth design ensures positive tool engagement on ring nut (helps prevent slipping and possible damage to nut or other components)
- Pilot engages shaft to maintain alignment

References

SENR5840, Disassembly and Assembly, TH62, TH63, TH82, and TH83 Telehandlers Power Train
SENR5839, Specifications, Systems Operation, Testing and Adjusting, TH62, TH63, TH82, and TH83 Telehandlers Power Train
July 29, 1986 Service Magazine, Procedure for Setting Up Differential Groups, RT50, RT60, RT80, RT100, TH62, TH82, and TH83 Telehandlers

125-9786 Pinion Depth and Preload Setting Tools



125-9786 Setting Tools	
Arbor (Item 1)	
Overall length	196 mm (7.7 in)
Large outside diameter	60.3 mm (2.40 in)
Small outside diameter	41.2 mm (1.62 in)
Cap (Item 2)	
Length	50 mm (2.0 in)
Diameter	60.3 mm (2.40 in)
Threaded holes	3/8-16 for 1T-0131 Bolts
Center hole	Used with 5L-8894 Screw
Datum Bar (Item 3)	
Length	130 mm (5.1 in)
Width	31.75 mm (1.250 in)
Thickness	17.5 mm (0.69 in)

Part Number	Description
125-9786	Pinion Depth and Preload Setting Tool

183-7243 Pinion Set Gauge

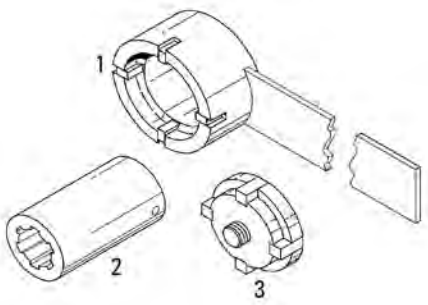
183-7243 Pinion Setting Gauge	
Length	43.371 ± 0.013 mm (1.7075 ± 0.0005 in)
Use with	125-9786 Setting Tool

Part Number	Description
183-7243	Pinion Set Gauge

125-9787 Pinion Nut Spanner Wrench, 125-9789 Spline Wrench 150-1716 Ring Nut Spanner Wrench

125-9787 Pinion Nut Spanner Wrench (Item 1)	
Overall length	381 mm (15.0 in)
Handle width	50 mm (2.0 in)
Socket inside diameter	50.3 mm (1.98 in)
Number of teeth	4
Tooth width	6.35 mm (0.25 in)
Distance between teeth	60.0 mm (2.36 in)
125-9789 Spline Wrench (Item 2)	
Overall length	89 mm (3.5 in)
Outside diameter	49 mm (1.9 in)
Socket depth	70 mm (2.75 in)
Number of spline teeth	6
Larger spline diameter	34.5 mm (1.36 in)
Small spline diameter	28.5 mm (1.12 in)
Spline tooth width	7.50 mm (0.295 in)
Square drive	3/4 in
150-1716 Ring Nut Spanner Wrench (Item 3)	
OAL	62 mm (2.44 in)
Outside diameter	69.85 mm (2.75 in)
Number of teeth	4
Tooth width	9.53 mm (0.375 in)
Distance between teeth	49.96 mm (1.967 in)
Square drive	1 3/4 in

Item	Part Number	Description
1	125-9787	Pinion Nut Spanner Wrench
2	125-9789	Spline Wrench
3	150-1716	Ring Nut Spanner Wrench



Reamers and Drill

SMCS Code: 3250-012
Model: See Below
Warranty: Six Months

- Installation of new differential case or bevel gear requires line reaming dowel pin holes through case flange and gear to ensure alignment and proper dowel pin installation

Reference

SMHS7872, Special Instruction

Model	Serial No. Prefex	Reamers
619	61F, 62F	143-5025
621	23H, 15U	143-5025
623	52U	143-5025
627	54K, 68M	143-5025
627	50K, 69M, 37V, 38V	1U-6729
630	52F, 14G	143-5025
631	51F, 13G, 67M1-67M-4418	143-5025
632	14G	143-5025
633	44J, 66M1-66M727	143-5025
637	64M, 65M1-65M386, 91N, 92N, 79P1-79P429, 26R	143-5025
657	19G, 53K1-53K778, 47M1-47M205	143-5025
666	20G1-20G268	143-5025
768	79S	143-5025
769	99F	143-5025
797	All	190-6107
824	29G, 36H	143-5025
825	43N	143-5025
826B	58U	143-5025
834	43E	143-5025
835	44N	143-5025
980	42H, 89P	143-5025
988	87A	143-5025
992	25K	143-5025

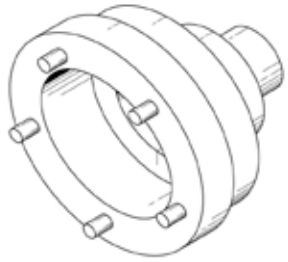
Part No.	Description	Size	Use	Model
1U-6729	Reamer	0.6158 in	Installation of new differential cases	Some 627 Scrapers
143-5025	Reamer	0.8640 in	Installation of new differential cases	619, 621, 623, 630, 631, 632, 633, 637, 657 and 666 Scapers, 768 Tractors, 769 Trucks
190-6107	Reamer	0.7980 in	Installation of bevel gears and bevel pinions	797 Trucks
143-5029	Drill	0.8858 in	--	--

246-5254 Spanner Wrench
Essential Tool

SMCS Code: 3258-025
Model: Telehandler TH -B series and D1Series AWD Backhoe Loaders
Warranty: Six Months

Part Number	Description
246-5254	Spanner Wrench

- Used to remove and install 229-5080 Final Drive Spanner Nut on limited production axles
- Used with 3/4 inch square drive ratchet or spanner wrench



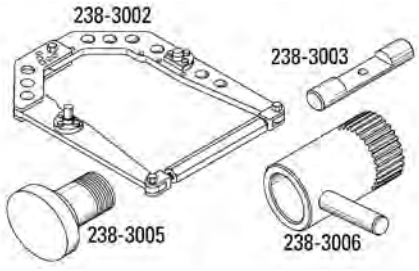
Tools for Setting Differential Backlash on CP/CS323C Compactor
Essential Tool

SMCS Code: 3269-015, 3269-016, 3269-017
Model: CP/CS323C Compactor
Warranty: Six Months

Part Number	Description
238-3002	Retractor
238-3003	Shaft
238-3005	False Pinion
238-3006	Pinion Lock Wrench

- Used to set bearing preload and backlash

Reference
KENR2783, Service Manual



230-7923 Spanner Wrench Assembly (M90)
Essential Tool

SMCS Code: 3258-025
Model: TH103, TH210, TH215, D1 Series Backhoe Loaders
Warranty: Six Months

- Used to remove and install wheel bearing nut
- Four teeth engage slots of nut for positive grip (helps prevent damage caused by tool slippage)
- Heat-treated for added strength and durability

Overall length	108 mm (4.25 in)
Inside diameter	121.5 mm (4.78 in)
Number of teeth	4
Tooth width	10.9 mm (0.42 in)
Distance between teeth	113.0 mm (4.45 in)

Part Number	Description
230-7923	Spanner Wrench Assembly (M90)

202-0453 Spanner Wrench Assembly
Essential Tool

SMCS Code: 3258-025
Model: Cat® Machines
Warranty: Six Months

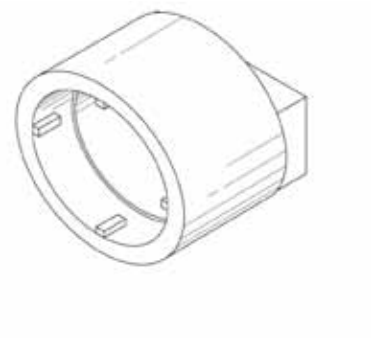
- Used to remove and install 226-4366 Final Drive/Bearing Retainer Spanner Nut
- 4 teeth engage slots of nut for positive grip (helps prevent damage caused by tool slippage)
- Heat-treated for added strength and durability

Overall length	117.6 mm (4.63 in)
Inside diameter	120.65 mm (4.750 in)
Number of teeth	4
Tooth width	10.9 mm (0.42 in)
Distance between teeth	111.0 mm (4.37 in)

Part Number	Description
202-0453	Spanner Wrench Assembly

313-9019 Spanner Wrench Assembly
Essential Tool

SMCS Code: 3256-025, 3258-025
Model: 725, 730, 735 Articulated Trucks; 725: S/N B1L1404-UP, 730: S/N B1M1294-UP, 730 Ejector: S/N B1W262-UP, 735 Rear Axle: S/N B1N830-UP
Warranty: Six Months



- Used to remove and install spanner nut that retains outer pinion bearing on differential
- Used on differentials with outer pinion bearings that have a slip fit
- Used with 3/4 inch drive ratchet wrench, breaker bar, or torque wrench
- 4 teeth engage slots of nut for positive grip (helps prevent damage caused by tool slippage)
- Allows for proper adjustment of spanner nut torque
- Heat-treated for added strength and durability

References
SEPD0877-00, Service Magazine
REBE1048-02, Service Letter

Overall length	82.6 mm (3.25 in)
Inside diameter	87 mm (3.43 in)
Number of teeth	4, equally spaced
Tooth width	5.8 mm (0.23 in)
Distance between teeth	80.5 mm (3.17 in)
Square drive	3/4 in

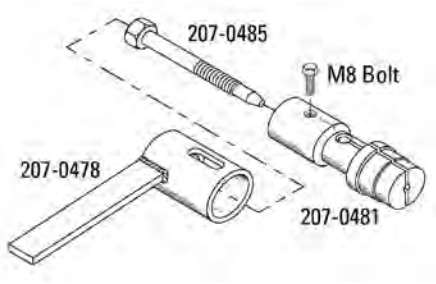
Part Number	Description
313-9019	Spanner Wrench Assembly

Crown Wheel Backlash Tools

Essential Tool

SMCS Code: 3258-016
Model: TH103 Telehandler
Warranty: Six Months

- Used to measure crown wheel backlash after assembly of bevel and pinion gear
- Tooling expands into differential bushing, allowing technician to rotate bevel gear back and forth to measure backlash
- Essential tool to correctly set crown wheel backlash
- Tightener rod is heat treated for added strength and durability
- Uses standard M8 bolt to hold axle socket to assembly socket
- Requires a 17 mm socket to tighten 207-0485 Tightener Rod



Reference

TH103 Telescopic Material Handler Service Manual

207-0478 Socket Assembly	
Overall length	215 mm (8.5 in)
Handle width	25.4 mm (1.0 in)
207-0481 Socket-Axle	
Overall length	123 mm (4.8 in)
Outside diameter	40 mm (1.6 in)
207-0485 Rod Tightener	
Overall length	140 mm (5.5 in)
Thread size	M12 x 1.25
Head size	17 mm

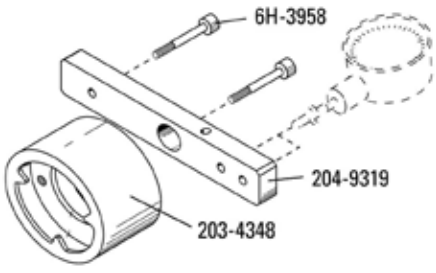
Part Number	Description
207-0481	Socket-Axle
207-0485	Rod Tightener
207-0478	Socket Assembly

208-5526 Gauge Group

Essential Tool

SMCS Code: 3258-025
Model: TH103 Telescopic Material Handler
Warranty: Six Months

- Used to adjust pinion bearing preload and set pinion depth on both front and rear axles
- Used with 6V-6106 Dial Indicator Group, 3P-1565 Collet Clamp, 5P-4156 Indicator Base, 5P-4162 Contact Point (98 mm), and 3S-3269 Contact Point
- Group includes 203-4348 Pinion Gauge Assembly, 204-9319 Gauge Bar Assembly, two 6H-3958 Socket Head Bolts, 6V-3073 Protective Case, 208-5527 Foam Block, and NEEG2939 Decal



Reference

Service Manual, TH103 Telescopic Material Handler

203-4348 Pinion Gauge Assembly

- Designed to sit on top of pinion shims (only way to accurately measure distance from top of shim to housing)
- 204-9319 Gauge Bar Assembly bolts onto pinion gauge (provides correct spacing for setting pinion height)

(Continued)

208-5526 Gauge Group (Continued)

Essential Tool

SMCS Code: 3258-025
Model: TH103 Telescopic Material Handler
Warranty: Six Months

204-9319 Gauge Bar Assembly

- Bolts onto 203-4348 Pinion Gauge Assembly using two 6H-3958 Socket Head Bolts
- Provides a stable indicator platform for taking front and rear axle measurements
- 2 preset depth holes allows dial indicator to be quickly and accurately set to 20 or 98 mm

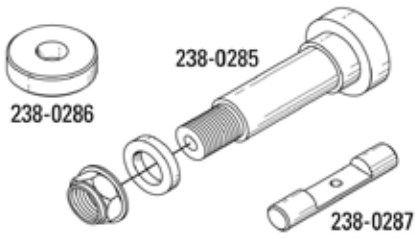
203-4348	
Overall length	89 mm (3.5 in)
Outside diameter	111.0 mm (4.37 in)
Inside diameter	99.0 mm (3.90 in)
6H-3958	
Thread size	1/4 - 20
Length	69.9 mm (2.75 in)
204-9319	
Length	228.5 mm (9.00 in)
Width	38 mm (1.5 in)

Part Number	Description
208-5526	Gauge Group
Consists:	
203-4348	Pinion Gauge Assembly
204-9319	Gauge Bar Assembly
6H-3958	Screw

Setting Pinion Shim Height in Telehandler Rear Axle

Essential Tool

SMCS Code: 3258-025
Model: TH460B, TH560B TeleHandler

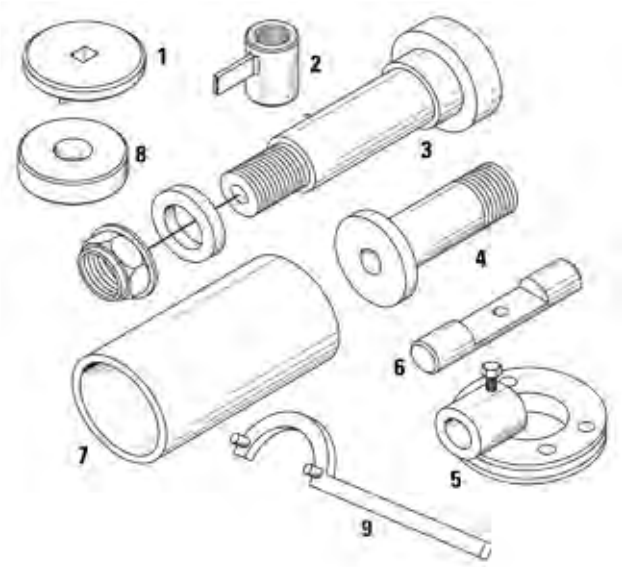


- Used to set pinion shim height in rear axle differential

Part Number	Description
238-0285	False Pinion
238-0286	Disc
238-0287	Shaft

Axle Repair Tooling
Essential Tool

SMCS Code: 3258-025
Model: 416D, 420D, 424D, 428D, 430D, 432D, 435D, 442D Backhoe Loaders; TH210, TH215, TH350B, and TH360B Telehandlers
Warranty: Six Months



Item	Part No.	Description	Used on Models	Use
1	235-2797	Spanner Wrench	210/215/350B/360B Front and Rear Axle	Adjust differential bevel gear backlash
2	235-2783	Backlash Wrench	210/215 Front Axle	Measure backlash on TH210 and TH215 front axle differentials
3	235-2788	False Pinion	350B/360B Front Axle	Set pinion shim height on front and rear axle differentials
3	235-2789	False Pinion	350B/360B Rear Axle; 416D, 420D, 424D, 428D, 430D, 432D, 435D, 442D Backhoe Loader Front Axle	--
3	235-2790	False Pinion	460B Front Axle	--
3	238-0285	False Pinion	460B Rear Axle	--
4	235-2786	False Pinion	210/215 Front Axle	Set pinion shim height on front and rear axle differentials
4	235-2787	False Pinion	210/215 Rear Axle	--
5	235-2784	Pinion Wrench	350B/360B Front and Rear Axle	Remove and install pinion nut
6	235-2796	Shaft	210/215/350B/360B Rear Axle	Set pinion shim height on rear axle differentials
6	238-0287	Shaft	460B Rear Axle	--
7	235-2792	False Differential	460B Front Axle	Set pinion shim height on front axle differentials
7	235-2793	False Differential	350B/360B Front Axle	--
7	235-2794	False Differential	210/215 Front Axle	--
8	235-2795	Disc	210/215/350B/360B Rear Axle	Set pinion shim height on rear axle differentials
8	238-0286	Disc	460B Rear Axle	--

(Continued)

Axle Repair Tooling (Continued)

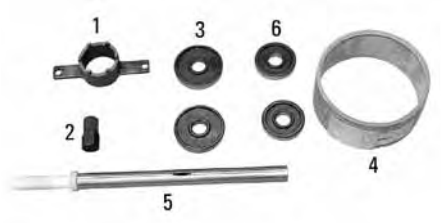
Essential Tool

SMCS Code: 3258-025
Model: 416D, 420D, 424D, 428D, 430D, 432D, 435D, 442D Backhoe Loaders; TH210, TH215, TH350B, and TH360B Telehandlers
Warranty: Six Months

Item	Part No.	Description	Used on Models	Use
9	235-2785	Pinion Wrench	416D, 420D, 424D, 428D, 430D, 432D, 435D, 442D Backhoe Loader Front Axle	Set Pinion and shim height

Special 90° Gear Reducer Tools

SMCS Code: 3250-017
Model: CS553 and CP553 Vibratory Soil Compactors
Warranty: Six Months



- Special tools required to correctly disassemble and assemble 90° gear reducer

References

KELR2134, Service Manual, CS553 Vibratory Soil Compactors-Smooth Drum
KELR2135, Service Manual, CP553 Vibratory Soil Compactors-Padded Drum

Item	Description	Use
2	Profiled Pin	Removal and Installation drive pinion slotted nut
6	Centering Plate (2)	Adjust gears and bearings

Item	Part No.	Description	Use
1	4C-5500	Hook Spanner	Removal and Installation drive pinion slotted nut
3	4C-4059	Plate Centering (2)	Adjust gears and bearings
4	1U-5933	Seal Installer	Install Duo-cone seals
4	1U-5847	Measuring Shaft	Adjust gears and bearings

4C-6487 Extractor Ring
4C-6488 Spacer

SMCS Code: 3283-011
Model: 416, 426, 428, 436
Warranty: Six Months

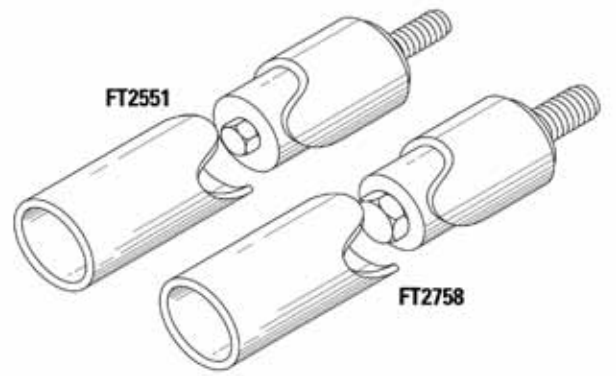
- Used to remove tapered roller bearings that are part of differential case assembly used in ZF powered front axle
- Bearings set backlash on crown wheel and are preloaded to adjust free play of differential bearing
- Both “Made As Ordered” (MAO)

Part Number	Description
4C-6487	Extractor Ring
4C-6488	Spacer

Axle Removal Tools

SMCS Code: 3259-010
Model: D5M and D6M Track-Type Tractors (FT2551) W345B Material Handler (FT2758)
Warranty: None

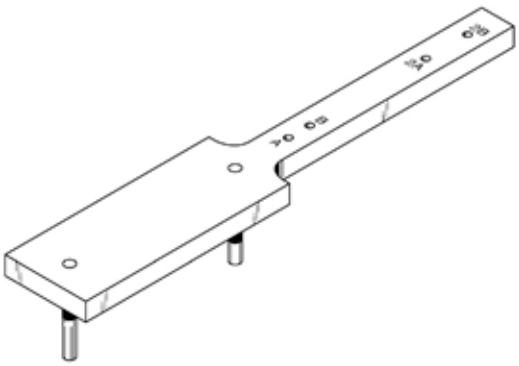
- Used to remove and install axle shafts
- Designed to reach inside axle housing to remove inner axle shafts
- Aligns easily with large diameter tubes
- Tool construction allows positive attachment to axle shaft



127-8072 Backlash Gauge

SMCS Code: 3258-082
Model: 12H, 120H, 135H, 140H, 143H, 160H, and 163H Motor Graders
Warranty: Six Months

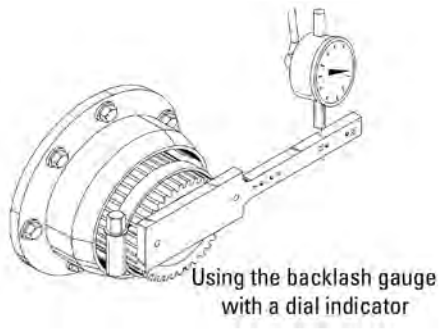
- Used to measure and check differential backlash
- Used with dial indicator
- Replaces current method of measuring backlash on pitch diameter of bevel gear tooth surface
- Gauge offers advantage of checking backlash by simply removing drive shaft and yoke (offers a quick trouble-shooting check)
- Tooling is designed to check backlash with differential in or out of axle housing
- Changes in backlash settings, after differential is mounted into axle housing, can also be quickly and easily determined
- Backlash gauge is attached by simply sliding tool over end of pinion shaft and clamping it in place (a simple band clamp will work)
- Pins of backlash gauge slide between splines on pinion providing a positive attachment
- Backlash gauge has four punch marks (A, B, 2A, and 2B) on it representing given pitch diameters of differentials (punch marks are also a guide for placement of dial indicator tip)
- Backlash is determined by setting up a dial indicator (outside of the differential case) and measuring movement at the appropriate mark on the gauge



Part Number	Description
127-8072	Backlash Gauge

Reference for 127-8072 Backlash Gauge

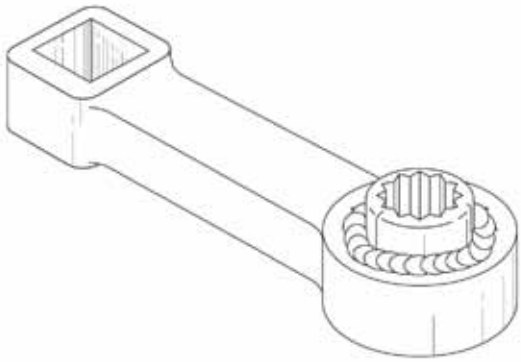
Service Manual Module


Using the backlash gauge with a dial indicator

Backlash specifications for marks A and B	0.25 ± 0.05 mm (0.010 ± 0.002 in)
Backlash specifications for marks 2A and 2B	0.51 ± 0.10 mm (0.020 ± 0.004 in)
Pitch diameter A	for 120H and 135H Motor Graders
Pitch diameter 2A	2 times pitch diameter for 120H and 135H Motor Graders
Pitch diameter B	for 12H, 140H, 143H, 160H, and 163H Motor Graders
Pitch diameter 2B	2 times pitch diameter for 12H, 140H, 143H, 160H and 163H Motor Graders

FT2582 Torque Wrench Assembly

SMCS Code: 3251-010
Model: 966G and 972G Wheel Loader
Warranty: None



- Used to remove and install universal joint bolts from drive shaft
- Used with standard 1/2 inch torque wrench
- Wrench fits into available, very limited clearance (standard wrench and socket is too large for this procedure)
- Made from two currently available parts

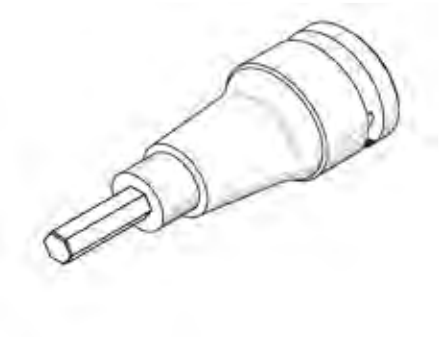
Reference

Service Manual for 938G Disassembly and Assembly Manual

Adapter	1P-2382
Socket, 12 mm	--
Square drive	1/2 in
Socket size	12 mm, 12 point

FT2775 Bit Socket Assembly (14 mm), FT2797 Bit Socket Assembly (17 mm) Essential Tool

SMCS Code: 4051-017
Model: 988F, 988G, 966F, 980G, Wheel Loaders; 824G, 834G, 836G Wheel Dozer
Warranty: None



- Used to remove and install socket head bolts holding hub assembly to wheel
- Required to obtain specified bolt torque
- Made from 2 standard parts

References

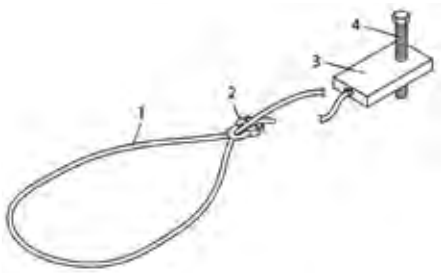
RENR3096, 988G Powertrain Disassembly and Assembly
RENR2183, 834G and 836G Powertrain Disassembly and Assembly
RENR3096, 988G Powertrain Disassembly and Assembly
RENR6029, 824G Powertrain Disassembly and Assembly

Part No.	Square Drive	Impact Socket	Socket Bit (14 mm)
FT2775	1 in drive, 14 mm bit	1U-7629	194-3548
FT2797	1 in drive, 14 mm bit	1U-7630	194-3549

FT2710 Chain Puller

SMCS Code: 0717-012
Model: 550, 570, and 580 Harvesters (with Chain Drives)
Warranty: None

- Used to install drive chains
- Provides safe method of installation and reduces installation time
- Threads over sprocket before inserting chain
- Cable is galvanized steel with a vinyl jacket
- Join cable loop with clip or weld into position
- Can be made of suitable equivalent materials



Item	Description	Grainger Part No.	Material
1	Cable	4KH26	
2	Clip	4KH30	
3	Block		SAE4140

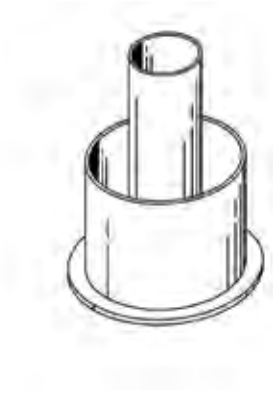
Item	Part Number	Description
4	1B-2714	Bolt

159-3285 Bearing Press Tool

Essential Tool

SMCS Code: 3260-016, 0722-016
Model: 216, 226, and 228 Skid Steer Loaders
Warranty: Six Months

- Used to install wheel bearings onto the axle spindle
- Quickly and accurately installs cone using any type or size of shop press

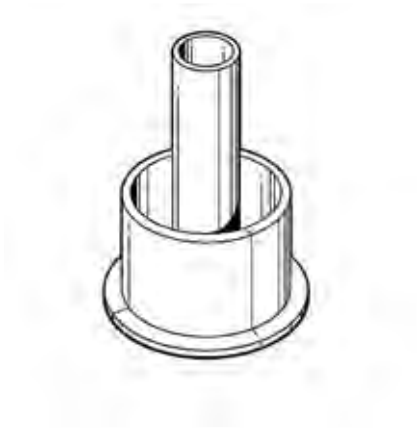


Weight	4 kg (6 lb)
Round base	175 mm (6.9 in)
Height	253.35 mm (9.97 in)

Part Number	Description
159-3285	Bearing Press Tool

179-4348 Bearing Installer
Essential Tool

SMCS Code: 3260-016, 0722
Model: 236, 246, 248, 252, and 262 Skid Steer Loader
Warranty: Six Months



- Used to install 155-9010 Bearing Cone onto 142-9024 Spindle or into 142-9058 Axle Group
- Provides fast, accurate installation using any type and size of shop press
- Weight: 4 kg (6 lb)

Part Number	Description
179-4348	Bearing Installer

173-0984 Bearing Driver
Essential Tool

SMCS Code: 3260-016, 0722
Model: 216, 226, and 228 Skid Steer Loader
Warranty: Six Months

- Used to install bearing cone into axle assembly
- Provides fast, accurate installation
- Made of tool steel for long life — heat-treated for added durability
- Hardness: Rc 37 to 42

Part Number	Description
173-0984	Bearing Driver

179-4350 Bearing Driver
Essential Tool

SMCS Code: 3260-016, 0722
Model: 236, 246, 248, 252, and 262 Skid Steer Loader
Warranty: Six Months

- Used to install 155-9432 Bearing Cone into 142-9085 Axle Group
- Provides fast, accurate installation using any type and size of shop press
- Made of tool steel for long life -- heat-treated for added durability
- Hardness: Rc 37 to 42

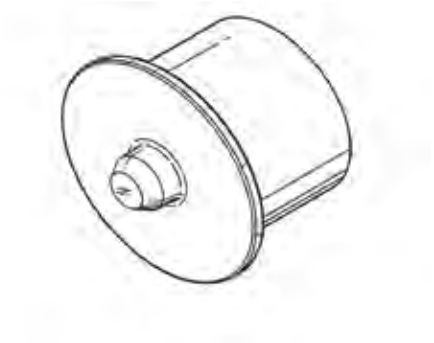
Part Number	Description
179-4350	Bearing Driver

174-1535 Seal Driver
Essential Tool

SMCS Code: 3260-016, 0722
Model: 216, 226, and 228 Skid Steer Loader
Warranty: Six Months

Part Number	Description
174-1535	Seal Driver

- Used to install grease seals into axle assembly
- Provides fast, accurate installation
- Made of tool steel for long life — heat-treated for added durability
- Hardness: Rc 37 to 42

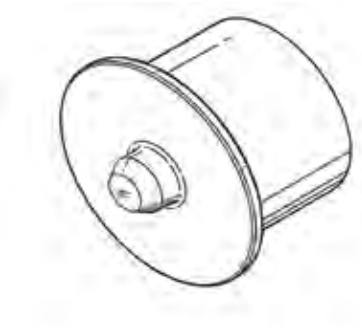


179-4353 Seal Driver
Essential Tool

SMCS Code: 3260-016, 0722
Model: 236, 246, 248, 252, and 262 Skid Steer Loader
Warranty: Six Months

Part Number	Description
179-4353	Seal Driver

- Used to install 155-5652 and 169-1679 Grease Seals into 142-9058 Axle Group
- Provides fast, accurate installation using a hammer or any type and size of shop press
- Made of tool steel for long life — heat-treated for added durability
- Hardness: Rc 37 to 42

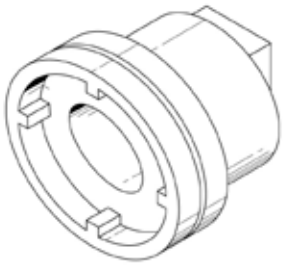


207-0757 Pinion Nut Socket

Model: MT735, MT745, MT755, and MT765 Ag Tractors
Warranty: Six Months

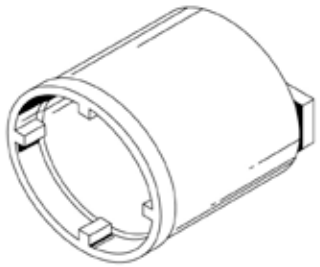
- Used to remove and install pinion locknut
- Used with a 12.7 mm (1/2 in) torque wrench
- Heat-treated for strength and wear resistance

Part Number	Description	Teeth	Square Drive
207-0757	Pinion Nut Socket	4 evenly spaced	1/2 in



225-4125 Spanner Wrench Assembly

Model: MT835, MT845, MT855, and MT865 Ag Tractors
Warranty: Six Months

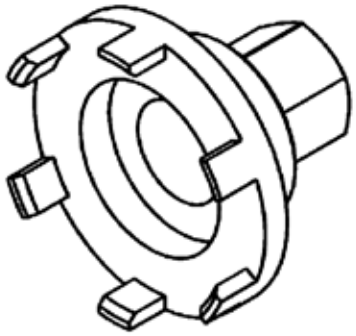


- Used to remove and install final drive locknut
- Used with a 25.4 mm (1 in) torque wrench
- Heat-treated for strength and wear resistance

Part Number	Description	Teeth	Square Drive
225-4125	Spanner Wrench Assembly	4 evenly spaced	1 in

383-4270 Spanner Wrench

SMCS Code: 3260-017
Model Usage: 938K Wheel Loader
Warranty: Six Months

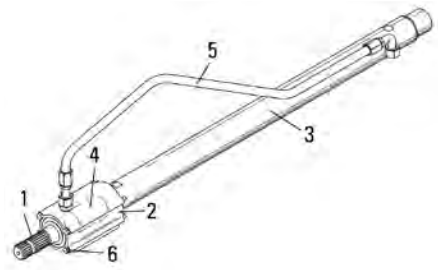


- Used to remove and install 365-1291 nut
- Used during the disassembly and assembly of certain axle housings

Part No.	Description
383-4270	Spanner Wrench
Specifications	
Outside Diameter	79.8 mm (3.14 in)
Tooth Inside diameter	71.7 mm (2.82 in)
Tooth Width	10.5 mm (.41 in)
Tooth Height	12.3 mm (.48 in)
Number of Teeth	6
Hex Size	30 mm (1.18 in)

210-1461 Dyno Tooling Group

SMCS Code: 1000, 0781
Model: MT835, MT845, MT855, and MT865 Ag Tractors
Warranty: Six Months



- Used to hook up and test tractors on engine dyno service tooling

Reference
REHS1333, Special Instruction

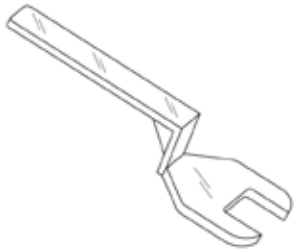
Service/Repair Parts		
Item	**Part No.**	**Description**
1	210-1462	Shaft
2	210-1463	Housing
3	210-1465	Shaft Assembly
4	210-1466	Coupling
5	116-9896	Hose Assembly
6	7X-0474	Bolt (4 required)

305-6884 Wrench
Essential Tool

SMCS Code: 3259, 4151
Model: 277C (JWF1-UP), 287C (MAS1-UP), 297C (GCP1-UP) Multi-Terrain Loaders
Warranty: Six Months

Part Number	Description
305-6884	Wrench

- Used to position torsion axle
- Allows removal and installation of C-series track roller frame
- Unique offset design works where standard tools will not
- Wrench opening is 77.8 mm (3.06 in)



264-4529 Set Ring
Essential Tool

SMCS Code: 3117-012
Model: D9R and D9T Track-Type Tractor
Warranty: Six Months

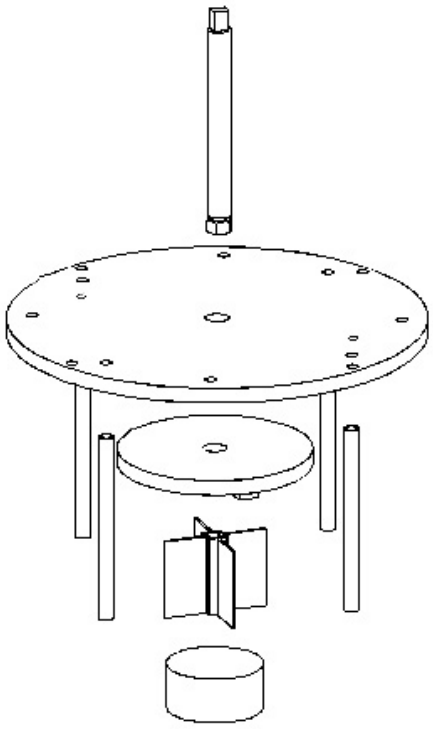
Part Number	Description
264-4529	Set Ring

- Used to check and establish correct backlash of bevel and transfer gear
- Used before final assembly
- Used in place of tapered bearing

Reference
RENR7471, Service Manual, D9T Track-Type Tractor Power Train Bevel and Transfer Gears

352-0433 Pre-Load Tool Kit

SMCS Code: 3256-016, 3258-016
Model Usage: 793F Off-Highway Truck
Warranty: Six Months



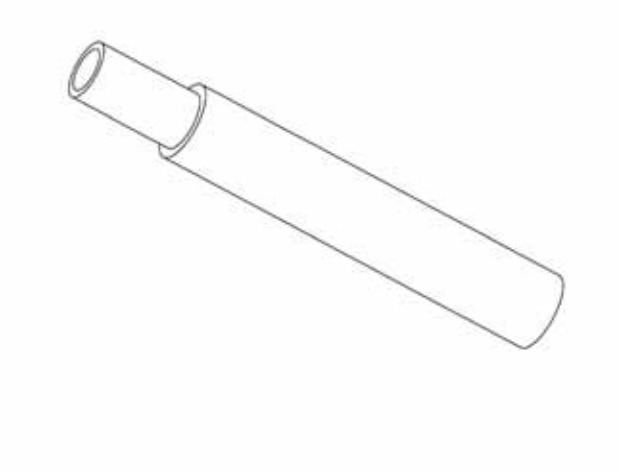
- Used to assemble the differential on the 793F Off-Highway Truck
- Black Oxide coating to increase corrosion resistance
- Used with 316-1495 hydraulic ram (not part of kit)

Specifications	
Height	300 mm (11.81 in)
O.D.	519 mm (20.43 in)
Weight	20.86 kg (46 lbs)

Part Number	Description
352-0433	Pre-Load Tool Kit

FT3169 Alignment Bushing

SMCS Code: 3278-012
Model: D9R, D9T, D10T, and D11T Track Type Tractor
Warranty: None



- Used to install axle shafts on specific Track-Type Tractors
- Protects lip seal from damage during axle shaft installation
- Different tool dimensions required for specific model and inner/outer axle shafts (refer to engineering print)
- Material: nylon

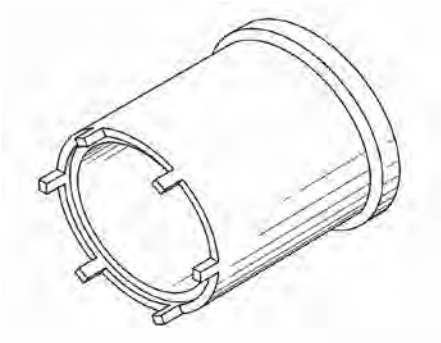
References

SENR5387, Service Manual, D9R Track-Type Tractor, Power Train, Disassembly and Assembly
RENR7471, Service Manual, D9T Track-Type Tractor, Power Train, Disassembly and Assembly
RENR8166, Service Manual, D10T Track-Type Tractor, Power Train, Disassembly and Assembly
RENR8226, Service Manual, D11T Track-Type Tractor, Power Train, Disassembly and Assembly

338-3941 Spanner Wrench Assembly
Essential Tool

SMCS Code: 3250-017
Model: M315C Wheeled Excavators
Warranty: Six Months

- Used to remove and install 246-6871 Nut on differential
- Used with 1 inch square drive wrench
- 6-tooth design fits special 130 mm nut
- Not to be used with impact air tools
- Welded steel construction
- Hardened (RKW C35-41) for long service life
- Black oxide coating to resist corrosion



Part No.	Description	Square Drive	No. of Teeth	Tooth ID	Tooth OD	Tooth Width
338-3941	Spanner Wrench Assembly	1 inch	6	122.50 mm (4.83 in)	133.35 mm (5.25 in)	10.25 mm (.40 in)

Fabricated Tools for 3192 and 7251 Marine Gears

SMCS Code: 3300-010, 3307-011
Model: 3192 and 7251 Marine Gears
Warranty: None

Item	Part No.	Description	Use
1	FT0850	Locking Bracket	Pulling lower shaft from ahead driven gear
2	FT0836	Bearing Cap	Seat top shaft bearing assembly
3	FT0840	Retaining Bracket	Prevent top shaft from sliding out of clutch packs
4	FT0841	Clamping Tool	Compress piston springs when installing retaining rings in ahead-astern clutch

6V-2042 Alignment Yoke
6V-2043 Alignment Bar

SMCS Code: 3300-024
Model: Most Cat® Marine Gears
Warranty: Six Months

- Used to mount dial indicator when checking engine generator alignment or alignment of marine gear output shaft to propeller shaft

Reference
SEHS7456, Special Instruction

Part Number	Description
6V-2042	Alignment Yoke
6V-2043	Alignment Bar

FT1486 Chain Assembly

SMCS Code: 3300-555
Model: 3408 or 3412 Marine Engines
Warranty: None

- Used to lock up front power take-off if clutch failure should occur
- Should be used for emergency purposes only when clutch is slipping under load and there is no other means to power winch for retrieval of fishing nets

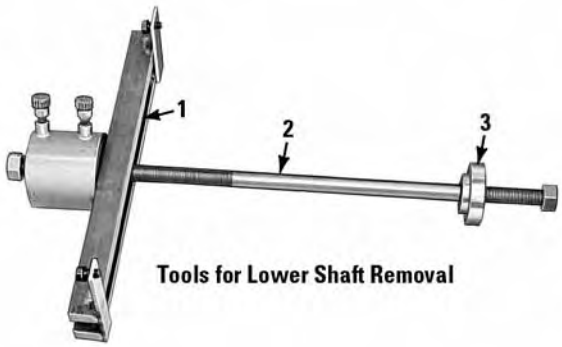
Reference
Engine News, October 31, 1979

Fabricated Tools for 7241 Marine Gear

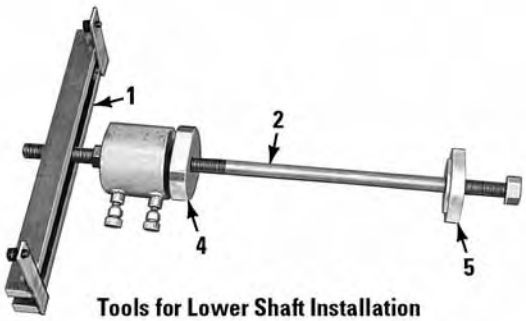
SMCS Code: 3307-010
Model: 7241 Marine Gear
Warranty: None

- Used to remove and install lower shaft when operation is performed without disconnecting gear from engine
- Tools not needed if marine gear is separated from engine

Item	Part No.	Description
1	FT1008	Puller Bracket
2	FT1007	Power Rod
3	FT1004	Front Removal Plate
4	FT1006	Rear Installation Plate
5	FT1005	Front Installation Plate
6	FT1009	Key



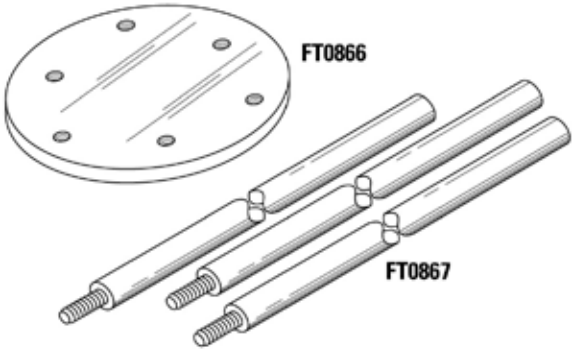
Tools for Lower Shaft Removal



Tools for Lower Shaft Installation

FT0866 Plate
FT0867 Rod

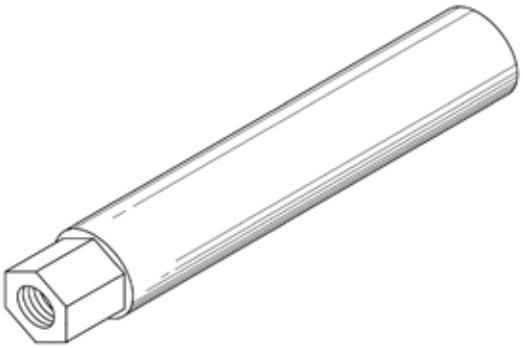
SMCS Code: 3304-011
Model: 3192 and 7152 Marine Gears
Warranty: None



- One FT0866 Plate and three FT0867 Rods used to remove planetary reduction gear main bearing

FT1575 Bar

SMCS Code: 3300-011
Model: 7211 and 7221 Marine Gears
Warranty: None



- Used with 9S-8901 Cylinder Group and 6H-4138 Arms to remove main drive gear from output shaft
- FT1575 Bar and 6H-4138 Arms replace 5F-9306 Arms and fabricated bar listed in early Service Manuals

Fabricated Tools for MG521 and MG527 Marine Gears

SMCS Code: 3300-010
Model: MG521 and MG527 Marine Gears
Warranty: 2P-8310 Driver Assembly: Six Months

- Special tools needed for disassembly and assembly of MG521 and MG527 Marine Gears

(Continued)

Fabricated Tools for MG521 and MG527 Marine Gears (Continued)

SMCS Code: 3300-010
Model: MG521 and MG527 Marine Gears
Warranty: 2P-8310 Driver Assembly: Six Months

Item	Part No.	Description	Use
1	FT1026	Pin	Idler gear removal from idler shaft
2	FT1027	Plate	Output shaft gear removal
3	FT1028	Spacer	Clutch assemblies installation
4	FT1029	Bar Assembly	Output shaft spanner nut removal and installation
5	FT1030	Plate	Clutch assemblies removal

Item	**Part No.**	**Description**	**Use**
6	2P-8310	Driver Assembly	Drive shaft spanner nut and bolt removal and installation

Fabricated Tools for 7271 Marine Gear

SMCS Code: 3300-010
Model: 7271 Marine Gear
Warranty: None

- Required for disassembly and assembly of 7271 Marine Gears

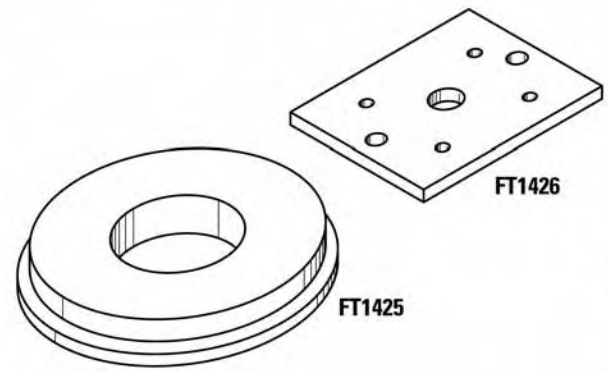
Item	Part No.	Description	Use
1	FT1365	Puller Adapter	Drive gear removal from top shaft (7:1 ratio); also input gear removal from input shaft
	FT1366	Puller Adapter	Drive gear removal from top shaft (5.55:1 and 6.07:1 ratios)
	FT1367	Puller Adapter	Drive gear removal from top shaft (4.5:1 and 5.09:1 ratios)
2	FT1368	Mounting Adapter	Used to mount forward or reverse top shaft to 1P-2420 Repair Stand for clutch disassembly and assembly
3	FT1369	Seal Installer	Used for output shaft seal installation
	FT1370	Seal Installer	Used for input shaft seal installation

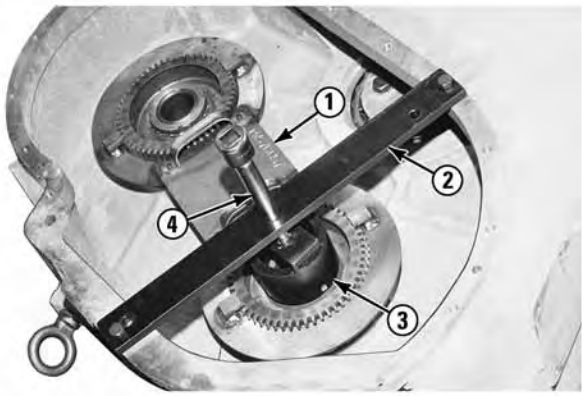
Fabricated Tools for 7211 and 7221 Marine Gears

SMCS Code: 3300-010
Model: 7211 and 7221 Marine Gear
Warranty: None

- Used for certain disassembly and assembly operations

Part No.	Description	Material	Use
FT1425	Seal Installer	SAE1020 Steel	used to locate and install output shaft seals
FT1426	Puller Plate	SAE1020 Steel	used to remove retainer assembly from forward and reverse clutch shafts
Item	Part No.	Description	Use
1	FT1554	Holding Fixture	Used with 8H-8548 Socket Extension and torque wrench to tighten retainer nuts which hold clutch drive hubs
2	FT1553	Support Bar	Used with 8H-8548 Socket Extension and torque wrench to tighten retainer nuts which hold clutch drive hubs



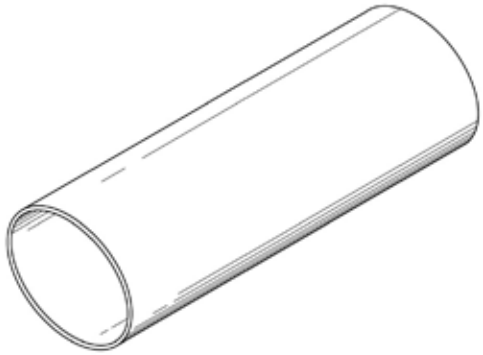


Item	Part No.	Description	Use
3	6V-2065	Spanner Wrench	Used with 8H-8548 Socket Extension and torque wrench to tighten retainer nuts which hold clutch drive hubs
4	8H-8548	Socket Extension	--

FT2325 Seal Driver

SMCS Code: 3300-010
Model: CB534 Compactor
Warranty: None

- Used in replacement of seals at each end of torque converter
- Ensures fast and proper installation of seals
- Can be fabricated from round steel tubing machined to dimensions shown in illustration

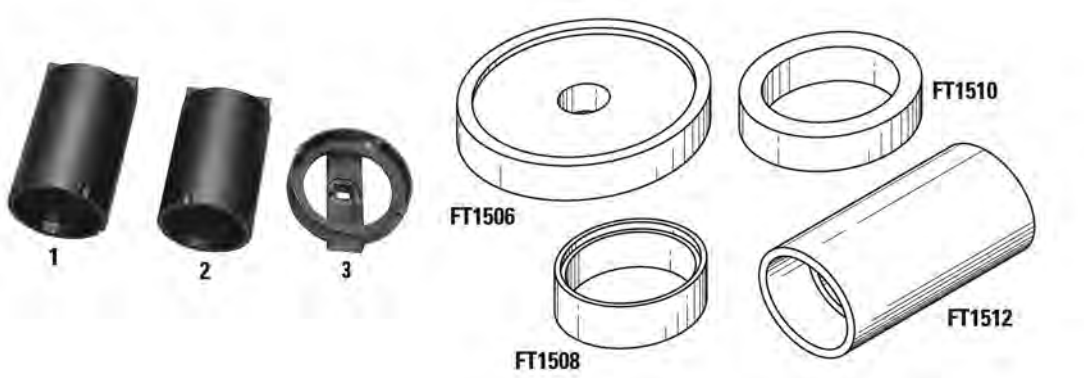


Tools for 7231 and 7241 Marine Gears

SMCS Code: 3302-010
Model: 7231 and 7241 Marine Gear
Warranty: Six Months

- Used to assemble ahead clutch shaft and astern drive shaft

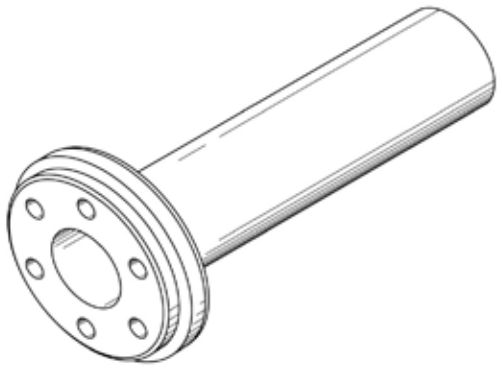
Part No.	Description	Model	Material
FT1506	Plate	7231 and 7241	SAE4140 Steel
FT1508	Spacer	7231	SAE4140 Steel
FT1510	Spacer	7241	SAE4140 Steel
FT1512	Spacer	7231 and 7241	SAE4140 Steel
Item	Description	Model	
2	Spanner Wrench	7231	



Item	Part Number	Description	Model
1	6V-3133	Spanner Wrench	7241
3	6V-3134	Spanner Wrench	7241

FT1614 Cover

SMCS Code: 3300-011
Model: 7251 and 7261 Marine Gear
Warranty: None



- Used to protect 2N-3469 Center Shaft Assembly during removal of top shaft assembly
- To install FT1614, remove 4L-4296 Retainer, then fasten FT1614 Cover to transmission in place of retainer; leave cover in place until top shaft and transmission cover are completely installed

Service Tools for Reintjes Marine Gears

SMCS Code: 3360-010
Model: See Chart
Warranty: Six Months

- Required for complete disassembly and assembly of Reintjes Marine Gear Models
- Chart A for: WAF240, WVS233, WAF242, WAF260, WAF262, WAF340, WAF360, WVF233, WAF440 and WAF460
- Chart B for: WAF540, WAF560, WAF640, WAF660, WAF740, WAF760, WAF840, WAF860, WAF1140, WAF1160, WAF1540, WAF1560 and WAF1590
- Numbers shown in the chart are quantity of tools needed to service marine gear model shown at the top of the column--if no quantity shown, tool not applicable for that model
- For tools that are common to more than one model, avoid unnecessary duplication by ordering maximum quantity specified for any one of models you intend to service

NOTE:
Some tools listed in the chart are not stocked in the Cat® parts system and will be sourced from the supplier as orders are placed. Tool orders should be placed at least two months before the date of anticipated need if at all possible. However, if a short lead time situation exists, an emergency order should be placed.

Reference
SENR3775, Service Repair Reference for Reintjes Marine Gears

Reintjes Marine Gear Tooling (continued)

Cat Part No.	Description	Reintjes Part No.	WAF 240	WVS 233	WAF 242	WAF 260	WAF 262	WAF 340	WAF 360	WVS 333	WAF 440	WAF 460
1P-2375	Coupler Assembly Quick Connective (Male)	--	1	1	1	1	1	1	1	1	1	1
1H-3107	Puller	395722	--	--	--	--	--	--	--	--	--	--
1P-2322	Puller	318205	--	--	--	--	--	--	--	--	--	--
5F-7343	Puller	395722	--	--	--	--	--	--	--	--	--	--
6V-3160	Hydraulic Puller	200913[1]	1	1	1	1	1	1	1	1	1	1
8B-7548	Puller Assembly - Bearing	404195	1	1	1	1	1	1	1	1	1	1

(Continued)

Service Tools for Reintjes Marine Gears (Continued)

SMCS Code: 3360-010
Model: See Chart
Warranty: Six Months

Reintjes Marine Gear Tooling (continued)												
Cat Part No.	**Description**	**Reintjes Part No.**	**WAF 240**	**WVS 233**	**WAF 242**	**WAF 260**	**WAF 262**	**WAF 340**	**WAF 360**	**WVS 333**	**WAF 440**	**WAF 460**
8B-7551	Bearing Puller Assembly	404195	1	1	1	1	1	1	1	1	1	1
8F-0024	Hose Assembly	--	1	1	1	1	1	1	1	1	1	1
1P-2376	Coupler Assembly Quick Connective (Female) (2)	--	1	1	1	1	1	1	1	1	1	1
8T-8443	Bolt	9180	--	--	--	--	--	6	--	--	--	--
8T-4137	Bolt	10804	--	--	--	--	--	--	--	--	--	--
5P-7970	Nut	12556	--	--	--	--	--	--	--	--	--	--
6V-7742	Nut	12610	--	--	--	--	--	--	--	--	--	--
8T-1757	Nut	12599	--	--	--	--	--	--	8	8	8	8
8T-4133	Nut	12564	--	12	12	--	--	--	--	--	--	--
8T-3282	Washer	12149	--	--	--	--	--	--	--	--	--	--
6V-8178	Washer	12106	4	--	--	8	8	8	--	--	--	--
6V-8495	Washer	12092	--	12	12	--	--	--	--	--	--	--
5P-8247	Hard Washer	12122	--	--	--	--	--	--	8	8	8	8
9M-1974	Washer	12084	--	--	--	--	--	--	--	--	--	--

[1] 200913 Hydraulic Press includes the Pump Group, Hose Assembly and Coupler Assemblies

Reintjes Marine Gear Tooling (Continued)

Reintjes Marine Gear Tooling															
Cat Part No.	**Description**	**Reintjes Part No.**	**WAF 540**	**WAF 560**	**WAF 640**	**WAF 650**	**WAF 740**	**WAF 760**	**WAF 840**	**WAF 860**	**WAF 1140**	**WAF 1160**	**WAF 1540**	**WAF 1560**	**WAF 1590**
6V-3160	Hydraulic Puller	200913[1]	1	1	1	1	1	1	1	1	1	1	1	1	1
8F-0024	Hose Assembly	--	1	1	1	1	1	1	1	1	1	1	1	1	1
1P-2375	Coupler Assembly Quick Connective (Male)	--	1	1	1	1	1	1	1	1	1	1	1	1	1
1P-2376	Coupler Assembly Quick Connective (Female) (2)	--	1	1	1	1	1	1	1	1	1	1	1	1	1

(Continued)

Reintjes Marine Gear Tooling (Continued) (Continued)

Reintjes Marine Gear Tooling															
Cat Part No.	**Description**	**Reintjes Part No.**	**WAF 540**	**WAF 560**	**WAF 640**	**WAF 650**	**WAF 740**	**WAF 760**	**WAF 840**	**WAF 860**	**WAF 1140**	**WAF 1160**	**WAF 1540**	**WAF 1560**	**WAF 1590**
8T-8443	Bolt	9180	--	--	--	--	--	--	--	--	--	--	--	--	--
8T-4137	Bolt	10804	2	2	--	--	--	--	--	--	--	--	--	--	--
8T-1757	Nut	12599	--	--	--	--	--	--	--	--	--	--	--	8	8
5P-7970	Nut	12556	16	16	--	--	--	--	--	--	--	--	--	--	--
8T-4133	Nut	12564	--	--	16	16	16	16	16	16	--	--	--	--	24
6V-7742	Nut	12610	--	--	--	--	--	--	--	--	--	--	12	16	16
6V-8178	Washer	12106	--	--	--	--	--	--	--	--	--	--	8	8	8
6V-8495	Washer	12092	--	--	16	16	16	16	16	16	--	--	--	--	24
5P-8247	Hard Washer	12122	--	--	--	--	--	--	--	--	--	--	--	8	8
9M-1974	Washer	12084	16	16	--	--	--	--	--	--	--	--	--	--	--
8T-3282	Washer	12149	--	--	--	--	--	--	--	--	--	--	12	16	16
1P-2322	Puller	318205	1	1	1	1	1	1	1	--	1	1	--	--	--
8B-7548	Puller Assembly - Bearing	404195	1	1	--	--	--	--	--	--	--	--	--	--	--
8B-7551	Bearing Puller Assembly	404195	1	1	--	--	--	--	--	--	--	--	--	--	--
5F-7343	Puller	395722	1	1	1	1	1	1	1	1	1	1	1	1	1
1H-3107	Puller	395722	1	1	1	1	1	1	1	1	1	1	1	1	1

[1] 200913 Hydraulic Press includes the Pump Group, Hose Assembly and Coupler Assemblies

Final Drive

Gear Final Drive Sprocket and Support Removal Tools

SMCS Code: 4050-010, 4050-017
Model: See Below
Warranty: Six Months

- Attachments for hydraulic service tools that make it possible to use hydraulic force to remove and install tight fitting components such as final drive sprockets, gears, and bearing supports
- Basic use of each tool is described below but some tools are also used in other operations

NOTE:
Tonnage capacity of tool is given in parentheses. Use of tool is limited to the cylinder of that tonnage; i.e., 9S-8900 Cylinder Group for 70 ton applications and 9S-8901 Cylinder Group for 100 ton applications.

Sprocket Removal Tools		
Item	Description	Use
1	Yoke (3)	Sprocket hub inner bearing, early D9
2	Yoke Assembly	Sprocket hub inner bearing, D4C, D4D
2	Yoke (Drilled)	
3	Yoke (Drilled)	Sprocket hub inner bearing, D5, D6B
3	Yoke (Tapped)	
4	1U-6415 Puller Assembly	Final drive bearing cage holder, D7E, D7F, 571E, 571F, 572E, 572F and 983

Sprocket Removal Tools			
Item	**Part Number**	**Description**	**Qty.**
1	1D-3419	Bolt	3
1	1B-4207	Nut	3
2, 3 and 4	1B-4331	Nut	2
3	9S-1323	Stub	2
4	1U-6415	Puller Assembly	--
4	2A-1538	Bolt	--
4	4B-4280	Washer	2
4	4B-4281	Washer	2
4	1D-4720	Nut	--
4	4B-4283	Washer	2
4	1D-4593	Bolt	--
4	0S-1587	Bolt	--
4	1D-4719	Nut	--

Final Drive Sprocket, Gear and Support Removal Tools

Item	Description	Weight	Use
2	Adapter Assembly	100 ton	Sprocket installation, D9E
3	Adapter Assembly	100 ton	Sprocket installation, D, DD9G, 594
4	Sleeve Assembly	100 ton	Sprocket installation, D9, DD9G, 594
6	Sleeve		Sprocket installation, D4, D4C, D4D, 941, 951, D5, D6, D6B, 561C
7	Sleeve Assembly	100 ton	Final Drive Bearing Support removal and installation, D8H, 583H; also Sprocket removal, D9, DD9G
8	Sleeve	70 ton	
8	Sleeve	70 ton	Final Drive Support removal, early D9
9	Spacer Assembly	70 ton	
9	Plug	70 ton	
9	Spacer Assembly	70 ton	Sprocket Hub Inner Bearing removal, D5
10	Sleeve	70 ton	Plate Carrier installation, D9G
11	Sleeve Assembly	100 ton	Sprocket removal, D7E
14	Sleeve Assembly	100 ton	Final Drive Support installation, D9 Tractors
16	Sleeve	70 ton	Final drive bearing installation, D2, D3, 931; final drive gear removal, D2 (replaces discontinued 5F-9897)
17	Puller		Final Drive Support removal, D8H
18	Adapter		
19	Adapter		Sprocket installation, D7E, D7F, early 983, 572E
20	Adapter		Sprocket removal, 977K
21	Installer		Sprocket installation, later 983
22	Yoke		Tandem Drive Sprocket removal, early No. 12

(Continued)

Final Drive Sprocket, Gear and Support Removal Tools (Continued)

Final Drive Sprocket, Gear and Support Removal Tools				
Item	**Part Number**	**Description**	**Weight**	**Use**
1	8M-4843	Adapter Assembly	100 ton	Sprocket installation, D8H, 583H
5	1S-6645	Puller Sleeve Assembly	100 ton	Sprocket installation, D7E, D7F, 572E, 983, D8H, 583H, D9G, DD9G, 594
5	9H-3992	Head	100 ton	Sprocket installation, D7E, D7F, 572E, 983, D8H, 583H, D9G, DD9G, 594
12	7F-6068	Sleeve Assembly	70 ton	Sprocket installation, D2, D3, 931
13	1M-6756	Sleeve Assembly	100 ton	Final Drive Outer Bearing Support installation, D8H, 583H
15	8M-9010	Sleeve	100 ton	Sprocket installation, 955K, D6C, 561C, D7E, 572E
Item 6, Pusher Group (70 ton) Consists of:				
6	7F-5283	Head	--	Sprocket installation, D4, D4C, D4D, 941, 951, D5, D6, D6B, 561C
Sprocket and Final Drive Unit removal, D7E (Not Shown)				
--	1U-8236	Sling	--	--
--	138-7575	Bracket - Link (3)	--	--

Final Drive Bearing Removal Tools

SMCS Code: 4050-010, 4050-017
Model: Refer to Chart
Warranty: Six Months

- Used for removal of final drive bearings

Service/Repair Parts				
Part Number	**Description**	**Qty_3**	**Use**	**Model**
0L-1169	Bolt	3	--	--
1D-4720	Nut	3	--	--
1U-6415	Puller Assembly	--	Final drive bearing cage holder removal	D7E, D7F, 571E, 571F, 572E, 572F, 983
1U-6415 Puller Assembly Includes:				
0S-1587	Bolt	--	--	--
1B-4331	Nut	--	--	--
1D-4593	Bolt	--	--	--
1D-4719	Nut	--	--	--
1D-4720	Nut	3	--	--
2A-1538	Bolt	--	--	--
4B-4280	Washer	2	--	950, 966C

(Continued)

Final Drive Bearing Removal Tools (Continued)

SMCS Code: 4050-010, 4050-017
Model: Refer to Chart
Warranty: Six Months

Service/Repair Parts				
Part Number	**Description**	**Qty_3**	**Use**	**Model**
1U-6415 Puller Assembly Includes: (Continued)				
4B-4281	Washer	2	--	988
4B-4283	Washer	2	--	--

289-2961 Bearing Driver
Essential Tool

SMCS Code: 4009
Model: D3G, D4G, D5G Hystat Track-Type Tractors
Warranty: Six Months

- Used to install new bearing cones onto shafts of final drive units
- Engineered to install bearing cone to correct assembly dimension

Reference
RENR7485, Service Manual, Final Drive Disassembly and Assembly

Part Number	Description
289-2961	Bearing Driver

Sprocket Hub Outer Bearing Removal Tool

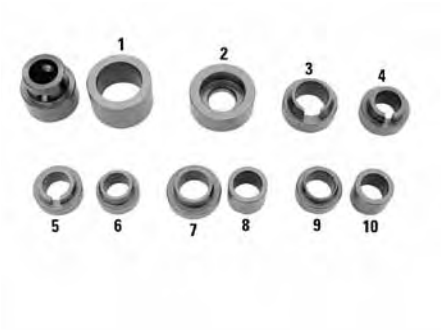
SMCS Code: 4050-010, 4050-017
Model: Refer to chart that follows
Warranty: Six Months

- Yoke used for sprocket hub outer bearing removal
- To determine what machine yoke is used on, refer to Sprocket and Final Drive Hub Removal Tool Chart that follows

Part Number	Description
1F-7057	Yoke

Sprocket Removal and Installation Tools

SMCS Code: 4050-010, 4050-017
Model: Refer to Chart
Warranty: Six Months



- Adapters and spacers that provide support for tooling at all times and keep final drive components tight and in alignment
- Used with other existing tooling to make sprocket removal and installation easier

Reference
SMHS6903, Special Instruction

Item	Description	Model
1	Spacer	D9G, 594
5	Adapter	D5, D6B, 561
9	Adapter	955K
10	Spacer	955K

(Continued)

Sprocket Removal and Installation Tools (Continued)

SMCS Code: 4050-010, 4050-017
Model: Refer to Chart
Warranty: Six Months

Item	Part Number	Description	Model
1	1P-5582	Adapter	D9G, D9H, 594
2	1P-5585	Adapter	D8H, 583H
3	1P-5591	Adapter	D7E, D7F, 983
4	1P-5590	Adapter	D6C, 561C
6	1P-5583	Adapter	D4, D4D, 941, 951
7	1P-5579	Adapter	977K
8	1P-5581	Spacer	977K

Sprocket Removal and Installation

Part Number	Description	D7E, F, G, 572E, F, G, 571A, F, G, 983 Remove Install	D8H, K, 583H, H Remove Install	D9G, H, DD9G, H, 594 Remove Install
5P-8837	Lock	R-1[1]	--	--
1P-5591	Adapter	R-1, I-1[1]	--	--
6V-4000	Head	R-1	R-1	R-1
6V-3125	Arm	R-3	R-3	R-3
6V-3123	Adapter	R-3	R-3	R-3
6V-3124	Nut	R-[1 2]	R-3	R-3
6V-3126	Pin	R-6	R-6	R-6
5P-5207	Stud	R-1, I-1	R-1, I-1	R-1, I-1
5P-5208	Nut[3]	I-1	R-1, I-1	I-1
5P-5209	Adapter Assembly	--	--	R-1, I-1
5P-5212	Plate Assembly	R-1, I-1	R-1, I-1	I-1
5P-5214	Sleeve	--	R-1	--
5P-5215	Adapter	R-1, I-1[4 5]	R-1	R-1[6]
5P-6220	Sleeve Assembly	I-1	--	--
5P-6222	Adapter	R-1, I-1[2]	--	--

[1] 983 only
[2] D7, 571 and 572 only
[3] Effective with 47A-3396, 48A-6393, 64A152, 65A151
[4] R-1: 983 and D7 only
[5] I-1: 983 only
[6] 594 only

Sprocket Removal

Description	D3, D3B, 931, 931B	D4, D4C, D4D, D4E, 941, 951	D5, D5B, D6, D6B, 561B, 561D	D6, 561C	D6D	955K, 955L	977K	977L
Adapter						1		
Spacer						1		
Adapter			1					
Electric Hydraulic Pump[1]	1	1	1	1	1	1	1	1
[1] Alternate pumps may be used								

(Continued)

Sprocket Removal (Continued)

Part Number	Description	D3, D3B, 931, 931B	D4, D4C, D4D, D4E, 941, 951	D5, D5B, D6, D6B, 561B, 561D	D6, 561C	D6D	955K, 955L	977K	977L
5F-9884	Adapter	1	--	--	--	--	--	--	--
5F-9306	Arm	3	3	3	3	3	3	3	3
7B-2499	Ring	--	--	--	--	6	1	--	1[1]
5F-9879	Shaft Adapter - Sprocket	--	--	--	1	--	1	1	--
5F-9882	Shaft Adapter - Sprocket	1	--	--	--	--	--	--	--
5F-9885	Shaft Adapter - Sprocket	--	--	1	--	--	--	--	--
5F-9888	Adapter Coupling	1	1	1	1	--	1	1	--
5F-9892[2]	Coupling Pin	1	1	1	1	--	1	1	--
6F-8343	Adapter - Rear Axle Shaft	1	--	--	--	--	--	--	--
8F-6220	Nut	3	--	3[3]	3[3]	3[3]	3[3]	3[3]	3
5H-9909	Pin Assembly	3	3	6	--	--	3	3	--
6H-1625	Adapter	3	--	3[3]	3[3]	3[3]	3[3]	3[3]	3
6H-4158	Pin	--	--	--	3	3	--	--	6
7M-9772	Coupling Pin	--	--	--	--	1	--	--	1
7M-9774	Adapter Coupling	--	--	--	--	1	--	--	1
1P-5579	Adapter	--	--	--	--	--	--	1	1
1P-5581	Spacer	--	--	--	--	--	--	1	1
1P-5583	Adapter	--	1	--	--	--	--	--	--
1P-5590	Adapter	--	--	--	1	1	--	--	--
3P-2248	Adapter (70 ton)	1	--	--	--	--	--	--	--
5P-2421	Adapter	--	3	3[1]	3[1]	--	3[1]	3[1]	--
5P-4183	Shaft Adapter (100 ton)	--	--	--	--	1	--	--	1
9S-8900	Cylinder Group	1	1	1	--	--	1	1	--
9S-8901	Cylinder Group	--	--	1	1	--	--	1	--

[1] Spoke-type Sprockets only
[2] Discontinued, part of the 8F-2550 Engine Tilting Group
[3] Disc-type Sprockets only

Final Drive Hub Outer Bearing and/or Cage Holder Removal

Part No.	Description	D4, D4C, D4E, 941, 951, 955K
FT0664	Spacer	10

Part No.	Description	D4, D4C, D4D, D4E, 941, 951, 955K	D5, D6, D6B, 561B	D6C, 561C	D5B, 561D	D6D	955L	977K, 977L
7B-2499	Ring	--	--	--	--	--	1	--
8B-7548	Puller Assembly - Bearing	--	--	--	1	1	1	--
8B-7554	Puller Assembly	--	--	--	1	1	1	--
8B-7559	Adapter	--	--	--	--	--	1	--
8B-7560	Step Plate	--	1	1	1	1	--	1
1F-7057	Yoke	--	--	1	--	1	--	--
5F-7345	Screw	--	--	--	1	--	--	--
5F-7379	Bolt	--	--	--	--	1	--	--
5F-9693	Wrench	1	--	--	--	--	--	--

(Continued)

Final Drive Hub Outer Bearing and/or Cage Holder Removal (Continued)

Part No.	Description	D4, D4C, D4D, D4E, 941, 951, 955K	D5, D6, D6B, 561B	D6C, 561C	D5B, 561D	D6D	955L	977K, 977L
7F-9306	Wrench	1	1	1	1	1	1	1
1H-3112	Puller Assembly	--	--	--	--	1	--	--
8H-0684	Wrench	--	--	--	1	--	--	--
2P-8261	Adapter	--	--	--	--	--	1	--
5S-6079	Socket	--	--	--	--	--	1	--
1P-0492	Plate	--	--	--	--	1	--	--
1P-2322	Puller	1	1	1	1	1	--	1

Final Drive Hub Outer Bearing and/or Cage Holder Removal (Continued)

Description	D3, D3B, 931, 931B	D4, D4C, D4D, D4E, 941, 951	D5, D6, D6B, 561B	D6C, 561C	D5B, 561D	D6D	955K	955L	977K	977L
Sleeve								1		
Adapter							1	1		
Spacer							1			
Adapter			1		1					
Electric-Hydraulic Pump[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
[1] Alternate pumps may be used										

Part No.	Description	D3, D3B, 931, 931B	D4, D4C, D4D, D4E, 941, 951	D5, D6, D6B, 561B	D6C, 561C	D5B, 561D	D6D	955K	955L	977K	977L
7B-2499	Ring	--	--	--	--	--	--	--	4	--	4
5F-9879	Shaft Adapter	--	--	--	1	--	--	1	1	1	--
5F-9884	Shaft Adapter	--	1	--	--	--	--	--	--	--	--
5F-9885	Shaft Adapter	--	--	1	--	1	--	--	--	--	--
5F-9888	Adapter Coupling	1	1	1	1	1	--	1	1	1	--
5F-9892[1]	Coupling Pin	1	1	1	1	1	--	1	1	1	--
6F-8343	Shaft Adapter	1	--	--	--	--	--	--	--	--	--
7F-5283	Head	--	--	--	1	--	1	1	1	--	--
7F-6068	Sleeve Assembly	1	--	--	--	--	--	--	--	--	--
7F-9306	Wrench	--	--	--	--	1	1	--	--	--	1
6H-4158	Pin	--	--	--	--	2	--	--	2	--	2
9H-3992	Head	--	--	--	--	--	--	--	--	--	1
7M-9772	Coupling Pin	--	--	--	--	--	1	--	--	--	1
7M-9774	Adapter Coupling	--	--	--	--	--	1	--	--	--	1
8M-9010	Sleeve	--	--	--	1	--	1	1	--	--	1
1P-5579	Adapter	--	--	--	--	--	--	--	--	1	1
1P-5581	Spacer	--	--	--	--	--	--	--	--	1	1
1P-5583	Adapter	--	1	--	--	--	--	--	--	--	--
5P-4183	Shaft Adapter (100 ton)	--	--	--	--	--	1	--	--	--	--

(Continued)

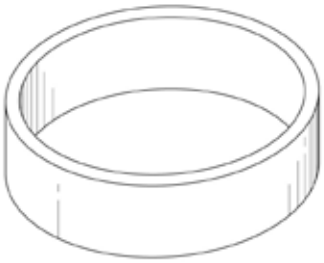
Final Drive Hub Outer Bearing and/or Cage Holder Removal (Continued) (Continued)

Part No.	Description	D3, D3B, 931, 931B	D4, D4C, D4D, D4E, 941, 951	D5, D6, D6B, 561B	D6C, 561C	D5B, 561D	D6D	955K	955L	977K	977L
9S-8900	Cylinder Group	1	1	1	1	1	--	1	1	1	--
9S-8901	Cylinder Group	--	--	--	--	--	1	--	--	--	1

[1] Discontinued, part of the 8F-2550 Engine Tilting Group

8T-3225 Spacer
Essential Tool

SMCS Code: 4050-016
Model: D5M (3CR1-Up, 3DR1-Up, 4BR1-Up, 4JS1-Up, 5ES1-Up, 5FS1-Up, 6AS1-Up, 6GN1-Up, 7LR1-Up), D5N (AGG1-Up, AKD1-Up, CFH1-Up, CKT1-Up), D6M (2RN1-Up, 2YS1-Up, 4GS1-Up, 5WR1-Up, 9ZM1-Up), D6N (AKM1-Up, ALH1-Up, ALR1-Up, ALY1-Up, CBF1-Up, CBJ1-Up, CBL1-Up, CCG1-Up, CCK1-Up, CCS1-Up)
Warranty: Six Months



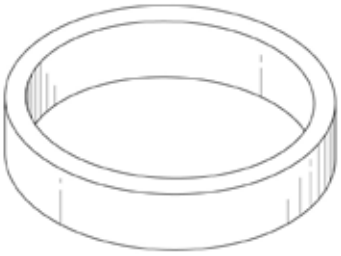
- Used to install bearing in final drive

References
RENR5257-01, D6N Track-Type Tractor Power Train, Disassembly and Assembly
SENR8487-02, D5M Track-Type Tractor Power Train, Disassembly and Assembly
SENR9467-02, D5M Track-Type Tractor Power Train, Disassembly and Assembly

Part Number	Description
8T-3225	Spacer

8T-5289 Spacer
Essential Tool

SMCS Code: 4050-016
Model: D6M (3WN1-Up, 4HS1-Up, 4JN1-Up, 5NR1-Up, 6LR1-Up) Track-Type Tractor, 517 (5WW1-Up, 6PW1-Up) Track Skidder
Warranty: Six Months



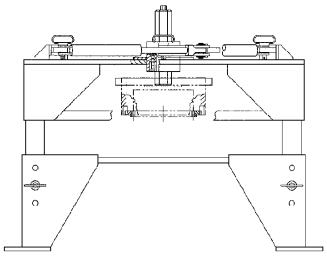
- Used to install bearing in final drive

References
RENR2027, 517 Track-Type Skidder Power Train Disassembly and Assembly
SENR8387, D6M Track-Type Tractor Power Train Disassembly and Assembly

Part Number	Description
8T-5289	Spacer

127-8458 Final Drive Disassembly and Assembly Bench

SMCS Code: 4050-017, 0727
Model: 5110, 5130, and 5230 Mining Excavators; 541, 322B, 325B, and 330B Forest Machines
Warranty: Six Months



- Used to properly tighten final drive bearing locknut [capable of producing 29,300 N·m (21,700 ft-lb) of torque for large final drive locknuts]
- Overall size: 152 cm (60.0 in) square
- Height of top surface at center height adjustment: 103 cm (40.8 in)

Disassembly and Assembly Bench

- Used with 3S-6624 Electric Hydraulic Pump (115 Volt) or 8S-8033 Electric Hydraulic Pump (230 Volt)
- Precisely tightens large locknuts to preset torque values
- Bench is manufactured with an upper and lower section (provides easier final drive installation and changing of final drive adapter rings)
- Torque adjustment is provided by an adjustable pressure reducing valve
- Bench can be adapted to other manufacturers final drive by fabricating new adapter rings
- Bench is self-contained and does not need to be bolted down (can be easily moved to storage area when not in use)

Spanner Sockets

- Designed to correctly fit locknut and transmit tightening force
- Capable of withstanding high torque required for tracked forest machine and mining excavator final drives
- Three spanner sockets are available; 127-8464 Spanner Socket (5130), 127-8463 Spanner Socket (5230) and 199-6557 Spanner Socket (Forest Machines)
- All 4 spanner sockets use a 127-8468 Reaction Bar to transmit force from bench to socket
- Threaded holes with lifting eyebolts allow sockets to be positioned using an overhead hoist

Adapter Rings

- Used to properly locate final drive in center of bench
- No adapter ring is required for final drive of 5230 Mining Excavator (bolts directly onto lower bench)
- Three additional adapter rings are currently available; 127-8460 Adapter Ring (5130), 190-0110 Adapter Ring (541, 330B) and 194-3885 Adapter Ring (322B, 325B). Additional adapter rings could be customer-fabricated for other model final drives.

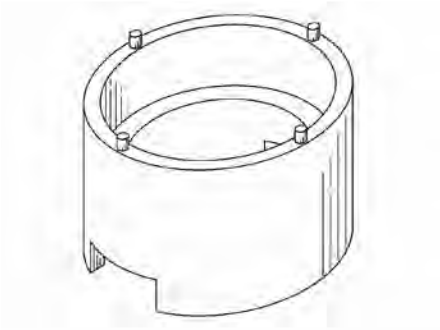
References

NEHS0673, Tool Operating Manual, 127-8458 Final Drive Disassembly and Assembly Bench and SENR6108 Service Manual
RENR2908, Service Manual

Part Number	Description
127-8458	Final Drive Disassembly and Assembly Bench
Repair Parts	
128-4075	Hex Shaft Assembly
128-4077	Cylinder Rod End
131-7409	Relief Valve
131-7410	Relief Valve

292-8544 Spanner Wrench Assembly
Essential Tool

SMCS Code: 4050-017
Model: RM300 and RM500 Road Reclaimers
Warranty: Six Months



- Used to remove and install final drive retainer nut
- 127-8468 Reaction Bar transmits force from bench to socket
- Used with 127-8458 Final Drive Bench and FT2983 Reaction Plate
- Designed to correctly fit locknut and transmit tightening force
- Capable of withstanding high torque required for final drive retaining nut
- M10 threaded holes for lifting eyebolts allow socket to be positioned using an overhead hoist

References
KENR3135, Service Manual, RM 500 Final Drive Disassembly and Assembly
KENR3145, Service Manual, RM 300 Final Drive Disassembly and Assembly
NEHS0673, Tool Operating Manual, 170-5903 Gear Inspection Stand Group

Part Number	Description
292-8544	Spanner Wrench Assembly

170-5903 Gear Inspection Stand Group

SMCS Code: 4055-040
Model: 777, 785, 789, 793, and 797 Off-Highway Trucks
Warranty: Six Months

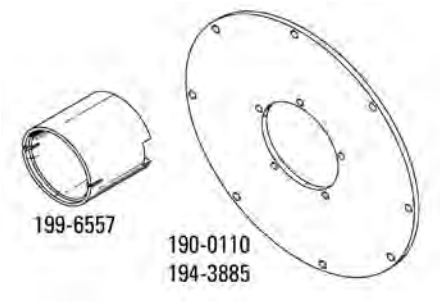
- Used to make complete and accurate inspection of gears to determine reusability
- Designed to fit large final drive sun and planet gears
- Mounting cones (2 required) will not damage gear surfaces
- Large base plate has space for a lighted magnifier

Reference
SEBF8193-01, Guideline for Gear Analysis and Assessment

Item	Part Number	Description
1	172-5076	Gear Stand Assembly
2	172-5077	Gear Cone Group
--	170-5903	Gear Inspection Stand Group

199-6557 Spanner Socket, 190-0110 Adapter Ring, 194-3885 Adapter Ring
Essential Tool

SMCS Code: 4050-017
Model: 541, 322B, 325B, and 330B Forest Machines
Warranty: Six Months



- Used to service final drive (properly tightens final drive bearing locknut)
- Used with 127-8458 Final Drive Disassembly and Assembly Bench

Spanner Socket
- Designed to correctly fit locknut and transmit tightening force
- Capable of withstanding high torque required for final drives

Adapter Ring
- Used to properly locate final drive in center of bench
- 190-0110 (330B, 541TFB)
- 194-3885 (322B, 325B)

References
RENR2908, 541 Feller Buncher Machine System Disassembly and Assembly
NEHS0673, Tool Operating Manual, 127-8458 Final Drive Disassembly and Assembly Bench

(Continued)

199-6557 Spanner Socket, 190-0110 Adapter Ring, 194-3885 Adapter Ring (Continued)

Essential Tool

SMCS Code: 4050-017
Model: 541, 322B, 325B, and 330B Forest Machines
Warranty: Six Months

Part Number	Description
190-0110	Adapter Ring
194-3885	Adapter Ring
199-6557	Spanner Socket

Final Drive Locknut Tooling for Multi-Terrain Loaders

Essential Tool

SMCS Code: 4050-017
Model: 247B, 247B2, 257B, 257B2, 277C, 287C, and 297C Multi-Terrain Loaders
Warranty: Six Months

- Used to service final drive
- Used with 127-8458 Final Drive Disassembly and Assembly Bench
- Designed to correctly fit and properly tighten final drive bearing locknut
- Capable of withstanding high torque required for final drives

FT3081 Adapter Ring

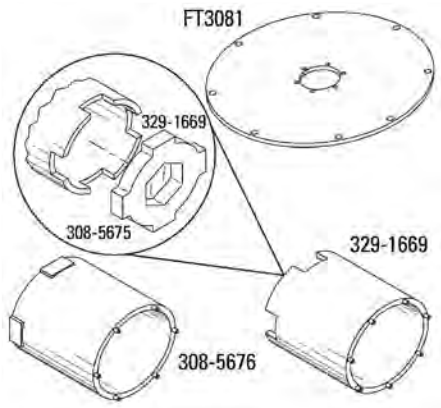
- Used to properly locate final drive in center of bench
- Used with 127-8458 Final Drive Disassembly and Assembly Bench

308-5676 Wrench Assembly

- Includes 308-5673 Spanner Assembly and 308-5675 Driver Assembly
- Used to remove six-hole final drive nut
- 9S-1307 Dowel Assembly is serviced separately

329-1669 Spanner Assembly

- Used with 308-5675 Driver Assembly (part of 308-5676 Wrench Assembly)
- 308-5675 Driver Assembly must be ordered separately
- Used to remove seven-hole final drive nut
- 9S-1307 Dowel Assembly is serviced separately



References

KENR5197 Service Manual, Power Train, Disassembly and Assembly, 277C, 287C, and 297C Multi-Terrain Loaders
RENR4874 Service Manual, Power Train, Disassembly and Assembly, 247B, 247B2, 257B, and 257B2 Multi-Terrain Loaders
NEHS0673 Tool Operating Manual, 127-8458 Final Drive Disassembly and Assembly Bench

Part Number	Description
308-5676	Wrench Assembly
329-1669	Spanner Assembly

118-6909 Final Drive Plate Assembly
Essential Tool

SMCS Code: 4351-010, 0727
Model: 5230 and 5230B Mining Excavators
Warranty: Six Months

- Used to hold internal final drive components in place while machine is being towed
- Plate assembly bolts to machine in place of final drive motor (4 required)
- Bolts to housing using bolts removed from motor
- Refer to Service Manual for specific details on towing

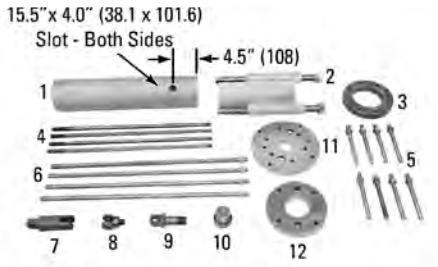
Reference

SEBU6737, Service Manual; Operation and Maintenance, 5230 and 5230B Mining Excavators

Part Number	Description
118-6909	Final Drive Plate Assembly

Sprocket Shaft Removal and Installation Tools

SMCS Code: 4050-010, 4050-017
Model: Refer to photo callouts
Warranty: Six Months



- Hydraulic service tool attachments used for sprocket shaft removal and installation on various models as indicated

NOTE:

Use of tool is limited to the cylinder of that tonnage; i.e., 9S-8900 Cylinder Group for 70 ton applications and 9S-8901 Cylinder Group for 100 ton applications

Item	Description	Tonnage Capacity	Use	Model
2	Puller Group	70 ton	Sprocket shaft removal	
3	Plate	100 ton	Sprocket shaft removal	Later D8H, D9G, later 583H, 594
11	Disc	70 ton	Sprocket shaft installation	D7F, early D8H, early D9
12	Plate	100 ton	Sprocket shaft installation	Later D8H, D8K, D9G, D9H, later 583H, 583K, 594

Item	Part No.	Description	Qty.	Tonnage Capacity	Use	Models
1	5S-1430	Sleeve (modify earlier sleeves as shown)	--	100 ton	Sprocket shaft removal	D5, D6B, D6C, D7E, D7F, D7G, 561, 955, 977
4	1M-6766	Stud	4	70 ton	Four required for sprocket shaft installation	Early D8H, early D9
5	5P-2677	Leg	--	100 ton	Sprocket shaft removal	Later D8H, D8K, D9G, D9H, later 583H, 583K, 594
6	5P-2678	Stud	4	100 ton	--	Later D8H, D8K, D9G, D9H, later 583H, 583K, 594
6	2J-3505	Nut	4	100 ton	Sprocket shaft installation	Later D8H, D8K, D9G, D9H, later 583H, 583K, 594
7	1P-3052	Link	--	70 ton	--	--

(Continued)

Sprocket Shaft Removal and Installation Tools (Continued)

SMCS Code: 4050-010, 4050-017
Model: Refer to photo callouts
Warranty: Six Months

Item	Part No.	Description	Qty.	Tonnage Capacity	Use	Models
8	6V-2052	Adapter	--	70 ton	Used with the 1P-3052 Link and 1P-3053 Adapter for sprocket shaft installation on track-type machines that have puller holes in the bevel gear case. Also these tools are used to install the 992 upper lift arm pin as described in Special Instruction GMG00806	--
9	1P-3053	Adapter	--	70 ton	--	--
10	5F-9889	Plug	--	--	Use with appropriate adapter and pin for sprocket shaft installation	D4C, D4D, D5, D6, D6B, D6C, D7, D7E, D7F, early D8, and D9G
Puller Group (70 ton) Consists of:						
2	7F-0482	Nut	2	--	Sprocket shaft removal	--
2	5F-9893	Stud	2	--	Sprocket shaft removal	--

Sprocket Shaft Removal and Install

Description	D7E[1], F, G, 572E[1], F, G, 571A[1], F, G, 983 Remove Install	D8H, K, 583H, K Remove Install	D9G, H, DD9G, H, 594 Remove Install
Electric Hydraulic Pump[2]	R-2 I-2	R-2 I-2	R-2 I-2
[1] Effective with 47A-3396, 48A-6393, 64A152, 65A151			
[2] Alternate pumps can be used			

Part Number	Description	D7E, F, G, 572E, F, G, 571A, F, G, 983 Remove Install[1]	D8H, K, 583H, K Remove Install	D9G, H, DD9G, H, 594 Remove Install
5P-2678	Stud	--	I-4	I-4
5F-9891	Bolt	--	I-2	I-2
6H-4158	Pin	I-10	--	--
9H-3992	Head	R-1	--	--
2J-3505	Nut	--	I-4	I-4
7F-9306	Wrench	I-1	--	--
5H-6197	Pin	--	R-3	R-3
7M-9772	Coupling Pin	I-1	I-1	I-1
7M-9773	Adapter - Sprocket	I-1	I-1	--
7M-9774	Adapter Coupling	I-1	I-1	I-1
1P-3052	Link	I-8	--	--
1P-3053	Adapter	I-2	--	--
6V-2052	Adapter	I-2	--	--
1P-5582	Adapter - Sprocket Removal	--	--	I-1
5P-2677	Leg	--	R-8	R-8
5P-5207	Stud	R-1	R-1	R-1
5P-5208	Nut[2]	R-1	R-1	R-1
5P-5215	Adapter	R-1	R-1	--
5S-1430	Sleeve	R-1	--	--
9S-5431	Sleeve Assembly	--	R-1	R-1
9S-5433	Puller Adapter	--	R-3	R-3

(Continued)

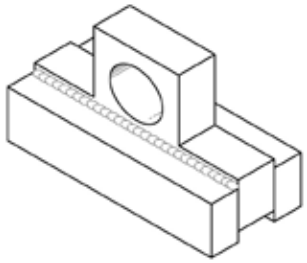
Sprocket Shaft Removal and Install (Continued)

Part Number	Description	D7E, F, G, 572E, F, G, 571A, F, G, 983 Remove Install[1]	D8H, K, 583H, K Remove Install	D9G, H, DD9G, H, 594 Remove Install
9S-8900	Cylinder Group	I-1	I-1	I-1
8S-6377	Lock	--	R-3	R-3

[1] D7E, 572E and 571A: Effective with 47A-3396, 48A-6393, 64A152, 65A151
[2] Effective with 47A-3396, 48A-6393, 64A152, 65A151

FT0521 Adapter

SMCS Code: 4050-036
Model: D9G Tractor
Warranty: None



- Used to check final drive bearing preload
- Material: 1018 Steel

5P-0316 Retaining Nut Spanner Wrench

SMCS Code: 4058-010
Model: D3 Tractor, 931 Traxcavator
Warranty: Six Months

- Used to remove and install sprocket shaft bearing retaining nut

Part Number	Description
5P-0316	Retaining Nut Spanner Wrench

Final Drive Pinion Flange Installation Tools

SMCS Code: 4094-012
Model: D3, 931, D4C, D5, D6B, 561B, 955, 977
Warranty: Six Months

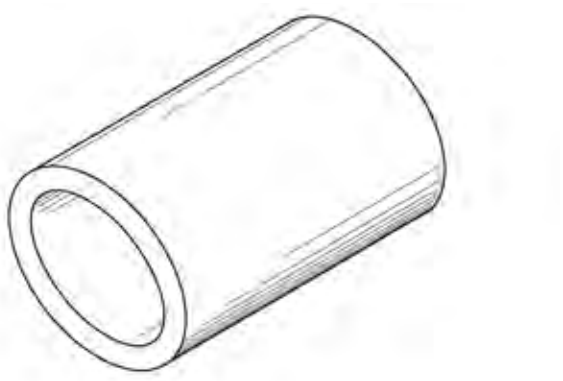
- Used to install final drive pinion flanges
- Also used for some steering clutch operations

Item	Part Number	Description
1	7B-8364	Bolt
2	7M-7237	Adapter
3	7M-7238	Sleeve
4	7B-8363	Bolt

FT0628 Spacer

SMCS Code: 4050-010
Model: 951B Traxcavator, D4D Tractor
Warranty: None

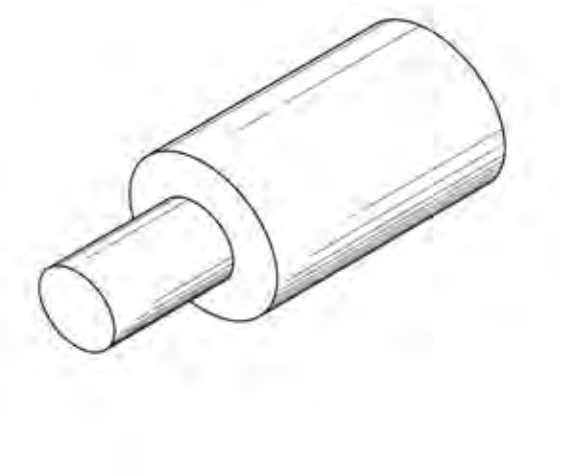
- Used when pulling sprocket on 951B Traxcavator and D4D Tractor equipped with power shift transmissions



FT0777 Puller Adapter

SMCS Code: 4057-010, 4091-010
Model: D6C Tractor
Warranty: None

- Effective with D6C Tractor, Serial Numbers 74A-2103-Up and 76A-3447-Up, a new deep-dished design requires FT0777 Puller Adapter to facilitate removal of final drive pinion flange
- Material: 1020 Steel



Final Drive Pinion Flange Installation Tools

SMCS Code: 0620, 4057
Model: D6C, D6D, D7F, D7G Tractors; 977K, 977L Loaders
Warranty: Six Months

- Used for installation of final drive pinion flanges; choose tools according to pinion number
- 6V-3094 Adapter replaces 8M-9007 Adapter (no longer serviced) because of design changes to final drive pinions
- Former 5S-0192 Pinion in D6 Tractors and 977 Loaders still available for parts service; if necessary to replace with 7G-5323 Pinion, mating gears must also be replaced

Reference
Service Magazine, January 14, 1985

(Continued)

Final Drive Pinion Flange Installation Tools (Continued)

SMCS Code: 0620, 4057
Model: D6C, D6D, D7F, D7G Tractors; 977K, 977L Loaders
Warranty: Six Months

NOTE:
Some earlier Tool Selection Charts and Service Manuals show incorrect tools for installation of final drive pinion flanges on D6C and D6D Tractors and 977K and 977L Loaders. Change Tool Selection Charts and Service Manuals to show the correct tooling listed in this article.

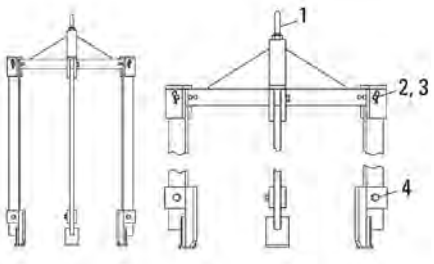
- 7B-8791 Bolt (1-1/4 inch-12 threads) incorrectly shown for use with 1S-6561 Adapter (1-1/4 inch-7 threads)
- 6V-3094 Adapter cannot be used to install flange on former 5S-0192 Pinion (1-1/2 inch-12 threads)

Part Number	Description
Tools needed for former 5S-0192 Pinion[1]	
1S-6560	Bolt
8M-9008	Spacer
Tools needed for 9S-6875, 7G-5323 and 9P-9362 Pinions[1]	
6V-3094	Adapter
7B-8791	Bolt
4B-5326	Washer
373-9825	Spacer

[1] Puller also required

149-7174 Lifting Bracket Assembly

SMCS Code: 4094-012
Model: 793 Off-Highway Truck
Warranty: Six Months



European Union compliant, CE marked

- Used to lift inboard bearing assembly during disassembly and assembly of final drive
- Used with overhead lifting device
- Primarily used when rear wheel spindle is in a vertical orientation
- Adjustable for various bearing diameters

References
SENR1462, Service Manual, 792C Off-Highway Truck/Tractor Disassembly and Assembly Manual
NEHS0985, Tool Operating Manual, 149-7174 Bearing Handling Bracket Assembly

Working load limit	85 kg (185 lb)

Item	Part Number	Description
--	149-7174	Lifting Bracket Assembly
Service/Repair Parts		
1	1P-7407	Eyebolt (1/2 - 13)
2	2M-5795	Pin (Clevis)
3	9L-7469	Lock Pin
4	0S-0509	Bolt (3/8 - 16)

4C-9471 Adapter

SMCS Code: 4123-012
Model: D6C, D6D, D7E, D7F Track-Type Tractors; 977K, 977L Loaders
Warranty: Six Months

- Used to install final drive pinion flange
- Provides sufficient thread engagement on 5S-0192 Pinion which was changed, adding 19 mm (3/4 in) long boss to splined end
- Used with 5P-4155 Spacer and longer 8F-1156 Bolt, 1 1/4 -7 thread
- OAL: 2.75 inch
- 1 1/4 -7 internal thread in 1 end and 1 1/2 -12 thread 1.62 inch long in other end

Reference
Service Magazine, January 14, 1985

(Continued)

4C-9471 Adapter (Continued)

SMCS Code: 4123-012
Model: D6C, D6D, D7E, D7F Track-Type Tractors; 977K, 977L Loaders
Warranty: Six Months

Part Number	Description
4C-9471	Adapter

Shaft Adapters and Coupling Components

SMCS Code: 4050-010, 4050-017
Model: Most Cat® Final Drives
Warranty: Six Months

- Adapters and coupling tools used for various final drive service operations

NOTE:
Tonnage capacity of tool is given in parentheses. Use of tool is limited to the cylinder of that tonnage; i.e., 9S-8900 Cylinder Group for 70 ton applications and 9S-8901 Cylinder Group for 100 ton applications.

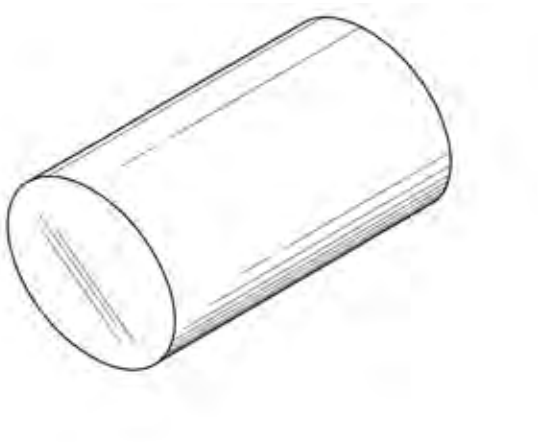
Item	Description	Size
1	Shaft Adapter	3/4 in - 16 male thd
2	Shaft Adapter	

Item	Part Number	Description	Size
3[1]	5F-9879	Shaft Adapter (70 ton)	1 3/4 in-12 thd
3	5F-9880	Shaft Adapter (70 ton)	1 7/8 in-12 thd
3	5F-9882	Shaft Adapter (70 ton)	2 1/2 in-12 thd
3	5F-9883	Shaft Adapter (70 ton)	1 5/8 in-12 thd
3	5F-9884	Shaft Adapter (70 ton)	1 3/8 in-12 thd
3	5F-9885	Shaft Adapter (70 ton)	1 1/2 in-12 thd
3	5P-4183	Shaft Adapter (100 ton)	1 3/4 in-12 thd
3	6F-8343	Shaft Adapter (70 ton)	2 1/4 in-12 thd
3	7M-9773	Shaft Adapter (100 ton)	2 1/2 in-12 thd
3	8M-9013	Shaft Adapter (100 ton)	2 1/8 in-12 thd
4	1P-5582	Shaft Adapter (100 ton)	4 in-12 thd
5	7M-9774	Adapter Coupling (100 ton for ram)	--
6	5F-9888	Adapter Coupling (70 ton for ram)	--
7	7M-9772	Coupling Pin (100 ton)	1 3/16 in diameter
7	3J-1770	Lock Pin (not shown)	--
8	5F-9892[2]	Coupling Pin (70 ton)	7/8 in diameter
9	7S-7112	Coupling Pin (100 ton)	1 3/16 in diameter

[1] All Item 3: Shaft Adapters (typical shown)
[2] Discontinued, part of the 8F-2550 Engine Tilting Group

FT0629 Spacer

SMCS Code: 4050-011
Model: 951B Traxcavator and D4D Tractor
Warranty: None



- Used with existing tooling for removing final drive bearing inner cone from final drive gear on 951B Traxcavator and D4D Tractor with power shift transmissions
- Material: 1020 Steel

Shaft Adapters

SMCS Code: 4050-011, 4066-011
Model: See Below
Warranty: Six Months

- Provide cylinder support after component is loose on its spline and during installation of tools
- Also used for removal of certain final drive components

Item	Description	Use	Model
1	Adapter	Sprocket and swing gear removal	225 Excavator

Item	Part No.	Description	Use	Model
2	5P-0972	Adapter (100 ton)	Sprocket removal, later; Outer bearing cage removal	D9G; D8H
3	3P-2248	Adapter (70 ton)	Outer bearing cage holder removal; Sprocket removal	D7E, D7F, 571E, 571F, 572E, 572F and 983; D3, 931
3	5P-4181	Extension Adapter (100 ton)	Sprocket shaft removal and installation	D5, D6B, D6C, 561, 955 and 977

Final Drive Pinion Flange Tools

SMCS Code: 4057-010
Model: See Below
Warranty: Six Months

- Used primarily for installation or removal of final drive pinion flanges

Item	Part Number	Description	Use	Model
1	1S-6560	Bolt	Installation	D6C, D7E, D7F
2	8M-9008	Spacer	Installation	D7E
3, 4	6V-3094	Adapter	Installation[1]	D6C, D6D, D7G, 977K, 977L
4	4C-9471	Adapter	Installation	D6C
5	8M-9011	Puller (1)	Removal	D7E

(Continued)

Final Drive Pinion Flange Tools (Continued)

SMCS Code: 4057-010
Model: See Below
Warranty: Six Months

Item	Part Number	Description	Use	Model
5	5P-4155	Spacer	Installation	D6C effective with 74A-2103, 76A-3747, 82A452, 83A598 and 977K, 977L effective with 11K1

[1] D6C, D6D, 977K, 977L effective with the use of 7G-5323 pinions

Additional Tools for Use With the Discontinued 5P-5200 Tool Arrangement

Warranty: Six Months

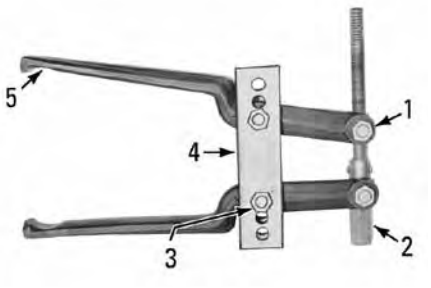
Item	Description
2	Adapter
4	Adapter
5	Sleeve
7	Adapter
9	Adapter

Item	Part Number	Description
1	5P-5215	Adapter
3	5P-5214	Sleeve
6	5P-6220	Sleeve Assembly
8	5P-6222	Adapter

5P-7311 Chain Puller Assembly

SMCS Code: 3261-010
Model: "G" Series Motor Graders
Warranty: Six Months

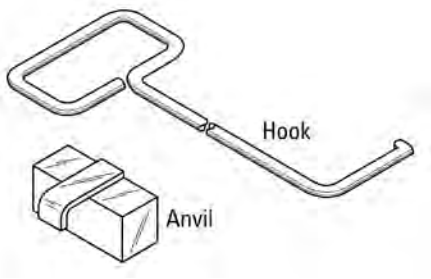
- Used to assemble tandem drive chains
- Puller jaws hooked into each end of chain to pull ends together for installation of master or cotter pin assembled connecting link
- Replaces 5P-4751 Chain Puller



Item	Part Number	Description	Qty.
1	5B-9079	Nut	4
2	5P-4750	Screw	--
3	0T-0924	Bolt	2
4	5F-7344	Block	--
5	5P-7341	Jaw	2
--	5P-7311	Chain Puller Assembly	--

FT2522 Hook/Anvil Chain

SMCS Code: 4063-012
Model: 24H Motor Grader
Warranty: None



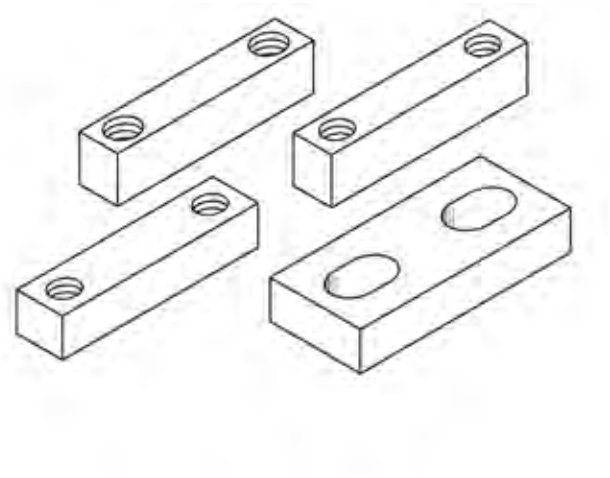
- Used to install tandem drive chains (makes chain installation a one-person operation)
- Hook helps to fish drive chain around brake drive gear (sprocket)
- Hook is designed to fit through 25 mm (1.0 in) hole in drive chain
- Anvil holds drive chain against tandem side plate while installing universal link
- Hook portion of anvil fits over chain and holds anvil in place
- With universal link held in place, side plate of universal link can be installed

References
SENR9000, Service Manual
SENR9011, Service Manual

Material	SAE1018 steel
Unformed length of anvil hook	88 mm (3.5 in)
Unformed length of hook	1522 mm (60.0 in)
Radius for bends in hook	6.35 mm (0.250 in)
Additional tooling to complete chain installation	5P-7311 Chain Puller Assembly

FT0537 Drive Chain Tool Group

SMCS Code: 3261-010
Model: 14, 16, 112 and 120 Motor Graders
Warranty: None

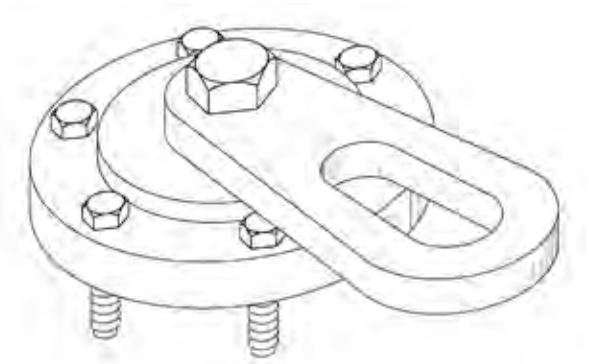


- Used with 1/2 inch-20 NF bolts, 3 1/2 inch long, to remove, and with 1/2 inch-20 NF bolts, 5 1/2 inch long, to install, master link from drive chains

FT0523 Adapter

SMCS Code: 4054-010, 4059-010
Model: D9 Tractors
Warranty: None

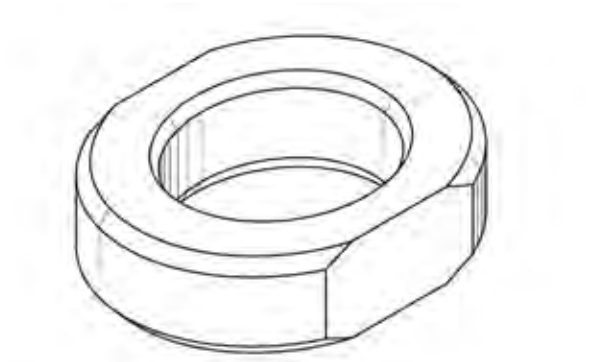
- Used to remove final drive assemblies
- Material: 1020 Steel



FT0664 Spacer

SMCS Code: 4058-011
Model: D4D Tractor and 941, 951 Traxcavators
Warranty: None

- Used to prevent dowels in final drive outer bearing cage from protruding over sprocket shaft nut during removal
- Makes removal of nut easier



Duo-Cone Seal Installers

SMCS Code: 4050-012
Model: Nearly All Cat® Machines
Warranty: Six Months

- Required for proper installation to ensure reliable performance of seals
- Chart 1 lists conventional seal installers along with data to help identify associated seal groups; specific installer part number required for each seal group part number is in column 4 of Numerical Parts Record
- Chart 2 lists current inverted seal group part numbers along with correct installation tools for each application; inverted seal may require several different installers depending on where it is installed; installer locates seal group correct distance from reference surface, which may differ with each application

(Continued)

Duo-Cone Seal Installers (Continued)

SMCS Code: 4050-012
Model: Nearly All Cat® Machines
Warranty: Six Months

Chart 1 - Conventional Seal Installers					
Part No. New	**Part No. Old**	**Toric Cross-Section**	**Seal Ring OD**	**Ramp Angle**	**Assembled Height**
340-0998	--	12.7 mm (0.50 in)	48.26 cm (19.00 in)	15°	--
129-1340	--	9.47 mm (0.37 in)	10.95 cm (4.31 in)	8°	--
136-6813	--	9.47 mm (0.37 in)	9.20 cm (3.63 in)	8°	--
140-7642	--	12.7 mm (0.50 in)	53.34 cm (21.00 in)	15°	14.5 ± 1.2 mm
173-6703	126-3994	12.7 mm (0.50 in)	32.80 cm (12.91 in)	15°	11.5 ± 1.0 mm
176-1724	--	12.7 mm (0.50 in)	45.72 cm (18.00 in)	8°	15.0 ± 1.0 mm
1U-5933	--	12.7 mm (0.50 in)	34.65 cm (13.64 in)	15°	11.5 ± 1.0 mm
1U-5934	--	12.7 mm (0.50 in)	34.65 cm (13.64 in)	8°	14.6 ± 0.9 mm
1U-6434	--	12.7 mm (0.50 in)	29.29 cm (11.53 in)	15°	11.5 ± 1.0 mm
1U-6435	--	12.7 mm (0.50 in)	29.29 cm (11.53 in)	8°	14.6 ± 0.9 mm
1U-6436	--	12.7 mm (0.50 in)	25.15 cm (9.90 in)	15°	11.5 ± 1.0 mm
1U-6437	--	12.7 mm (0.50 in)	25.15 cm (9.90 in)	8°	14.6 ± 0.9 mm
1U-6438	--	12.7 mm (0.50 in)	25.96 cm (10.22 in)	15°	11.5 ± 1.0 mm
1U-6439	--	12.7 mm (0.50 in)	21.03 cm (8.28 in)	15°	11.5 ± 1.0 mm
1U-6440	--	12.7 mm (0.50 in)	21.03 cm (8.28 in)	8°	14.6 ± 0.9 mm
1U-6441	--	12.7 mm (0.50 in)	19.13 cm (7.53 in)	15°	11.5 ± 1.0 mm
1U-6442	--	12.7 mm (0.50 in)	19.13 cm (7.53 in)	8°	14.6 ± 0.9 mm
1U-6443	--	12.7 mm (0.50 in)	17.17 cm (6.76 in)	15°	11.5 ± 1.0 mm
1U-8697	--	6.22 mm (0.24 in)	16.82 cm (0.66 in)	15°	7.7 ± 0.6 mm
1U-8698	--	6.22 mm (0.24 in)	15.70 cm (0.62 in)	15°	7.7 ± 0.6 mm
1U-8699	--	6.22 mm (0.24 in)	14.12 cm (0.56 in)	15°	7.7 ± 0.6 mm
1U-8840	--	9.47 mm (0.37 in)	9.20 cm (3.63 in)	20°	8.8 ± 0.6 mm
1U-8841	--	9.47 mm (0.37 in)	10.95 cm (4.31 in)	20°	8.8 ± 0.6 mm
1U-8842	--	9.47 mm (0.37 in)	11.91 cm (4.69 in)	8°; 20°	8.8 ± 0.6 mm; 8.8 ± 0.6 mm
1U-8849	--	9.47 mm (0.37 in)	14.61 cm (5.75 in)	15°; 8°	7.8 ± 0.6 mm; 8.8 ± 0.6 mm
1U-8850	--	6.22 mm (0.24 in)	10.48 cm (0.41 in)	15°	7.7 ± 0.6 mm
220-5726	--	12.7 mm (0.50 in)	31.09 cm (12.24 in)	15°	11.5 ± 1.0 mm
224-9466	--	9.47 mm (0.37 in)	8.25 cm (3.25 in)	20°	8.8 ± 0.6 mm
264-5067	--	12.7 mm (0.50 in)	80.67 cm (31.76 in)	15°	14.05 ± 0.25 mm
285-8787	--	12.7 mm (0.50 in)	42.77 cm (16.81 in)	15°	11.5 ± 0.25 mm
4C-4907	--	12.7 mm (0.50 in)	86.50 cm (34.05 in)	15°	--
4C-6206	--	9.47 mm (0.37 in)	17.15 cm (6.75 in)	20°	--
4C-6582	--	12.7 mm (0.50 in)	70.00 cm (27.56 in)	15°	14.5 ± 1.2 mm
4C-9527	--	6.22 mm (0.24 in)	22.25 cm (8.75 in)	15°	--
8T-0531	--	12.7 mm (0.50 in)	45.72 cm (18.00 in)	15°	11.5 ± 1.0 mm
8T-7789	--	12.7 mm (0.50 in)	39.45 cm (15.53 in)	8°	14.6 ± 0.9 mm
8T-9206	--	12.7 mm (0.50 in)	39.45 cm (15.53 in)	15°	11.5 ± 1.0 mm
9U-5691	--	12.7 mm (0.50 in)	56.79 cm (22.35 in)	15°	--

Chart 2 — Inverted Duo-Cone Seals Installation Tools

Toric Cross-Section	Seal Ring OD	Seal Ring Ramp Angle	Install Tool	Installation Tool Models	Assembled Height Dim 0.8 mm Max Variation Per Seal Ring	Alignment Sleeve
Seal Group 9W-7233[1]						
9.47 mm (0.37 in)	99.40 mm (3.91 in)	12.5°	8T-0830	D9L & D10N Idler	41.2 ± 0.8 mm	8T-0824
9.47 mm (0.37 in)	99.40 mm (3.91 in)	12.5°	8T-0827	D10 & D11N Roller	41.2 ± 0.8 mm	8T-0824
Seal Group 9W-6649[1]						
9.47 mm (0.37 in)	83.40 mm (3.28 in)	12.5°	8T-7641	D9N Roller	41.2 ± 0.8 mm	8T-0822
9.47 mm (0.37 in)	83.40 mm (3.28 in)	12.5°	8T-0828	D8L & D8N Roller	41.2 ± 0.8 mm	8T-0822
9.47 mm (0.37 in)	83.40 mm (3.28 in)	12.5°	8T-0939	D6H & D7H Idler, D7H Roller	41.2 ± 0.8 mm	8T-0822
9.47 mm (0.37 in)	83.40 mm (3.28 in)	12.5°	8T-0940	D6H Roller	37.0 ± 0.8 mm	8T-0822
Seal Group 9W-6651[1]						
9.47 mm (0.37 in)	93.40 mm (3.68 in)	12.5°	8T-0829	D9L & D10N Roller, D8L & D8N Idler	41.2 ± 0.8 mm	8T-0823
9.47 mm (0.37 in)	93.40 mm (3.68 in)	12.5°	8T-7640	D9L Idler	41.2 ± 0.8 mm	8T-0823
Seal Group 9W-7234[1]						
9.47 mm (0.37 in)	12.54 cm (4.94 in)	12.5°	8T-0826	D10 Idler, D11N Idler	41.2 ± 0.8 mm	8T-0825
Seal Group 9W-7238[1]						
9.47 mm (0.37 in)	99.40 mm (3.91 in)	12.5°	8T-0827	D10 & D11N Roller	41.2 ± 0.8 mm	8T-0824
9.47 mm (0.37 in)	99.40 mm (3.91 in)	12.5°	8T-0830	D9L & D10N Idler	41.2 ± 0.8 mm	8T-0824
Seal Group 9W-7239[1]						
9.47 mm (0.37 in)	12.54 cm (4.94 in)	12.5°	8T-0826	D10 Idler, D11N Idler	41.2 ± 0.8 mm	8T-0825
Seal Group 9W-7232[1]						
9.47 mm (0.37 in)	71.40 mm (2.81 in)	12.5°	8T-0941	D5H Idler	37.0 ± 0.8 mm	8T-0945
9.47 mm (0.37 in)	71.40 mm (2.81 in)	12.5°	8T-0942	D4H & D5H Roller	37.0 ± 0.8 mm	8T-0945
9.47 mm (0.37 in)	71.40 mm (2.81 in)	12.5°	8T-0943	D4H Idler	37.0 ± 0.8 mm	8T-0945
Seal Group 9W-7237[1]						
9.47 mm (0.37 in)	71.40 mm (2.81 in)	12.5°	8T-0941	D5H Idler	37.0 ± 0.8 mm	8T-0945
9.47 mm (0.37 in)	71.40 mm (2.81 in)	12.5°	8T-0942	D4H & D5H Roller	37.0 ± 0.8 mm	8T-0945
9.47 mm (0.37 in)	71.40 mm (2.81 in)	12.5°	8T-0943	D4H Idler	37.0 ± 0.8 mm	8T-0945
Seal Group 9W-6652[1]						
9.47 mm (0.37 in)	93.40 mm (3.68 in)	12.5°	8T-0829	D9L & D10N Roller, D8L & D8N Idler	41.2 ± 0.8 mm	8T-0823
9.47 mm (0.37 in)	93.40 mm (3.68 in)	12.5°	8T-7640	D9L Idler	41.2 ± 0.8 mm	8T-0823
Seal Group 9W-6650[1]						
9.47 mm (0.37 in)	83.40 mm (3.28 in)	12.5°	8T-7641	D9N Roller	41.2 ± 0.8 mm	8T-0822
9.47 mm (0.37 in)	83.40 mm (3.28 in)	12.5°	8T-0828	D8L & D8N Roller	41.2 ± 0.8 mm	8T-0822
9.47 mm (0.37 in)	83.40 mm (3.28 in)	12.5°	8T-0939	D6H & D7H Idler, D7H Roller	41.2 ± 0.8 mm	8T-0822
9.47 mm (0.37 in)	83.40 mm (3.28 in)	12.5°	8T-0940	D6H Roller	37.0 ± 0.8 mm	8T-0822
Seal Group 9W-6339[1]						
12.7 mm (0.50 in)	23.68 cm (9.32 in)	15°	198-7154	D350E3 - D400E2	--	198-7155

[1] All these seal groups are discontinued

4C-4907 Installer

SMCS Code: 4050-016
Model: 994 Loader
Warranty: Six Months

- Used in installation of large, 864 mm (34 in) diameter Duo-Cone seals of final drives
- Holds seal face parallel to, and correct distance from, housing face

Part Number	Description
4C-4907	Installer

Reference
SEHS8364-01, Special Instruction

Duo-Cone Seal Installers

SMCS Code: 4050-017
Model: 315, 320, 320B, 322, and 322B Excavators (126-3994) B-Series Gen III (173-6703)
Warranty: Six Months

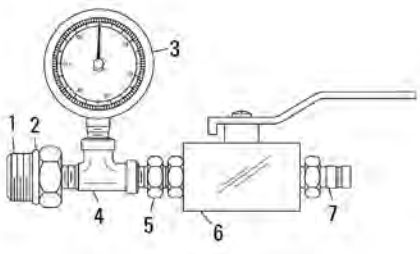
- Used to install Duo-Cone seal groups in final drives
- For longest service life, 2 steel rings with their mating surfaces must be positioned parallel to each other (most seal failures result from incorrect installation, many times caused by using improper installation tools)
- Prevents toric seal from rolling or twisting, making installation faster and easier (rubber toric rings hold steel rings parallel and concentric while maintaining correct face contact pressure)

Reference
SEHS8364, Special Instruction, Assembly and Installation of Duo-Cone Seals

Tool Usage and Seal Identification Chart					
Component	Seal Group	Toric Section Diameter	Seal Ring OD	Duo-Cone Seal Installer	Model Usage
Final Drive	096-8039 114-1497	12.7 mm (0.50 in)	32.80 mm (12.9 in)	126-3994	315, 320, 320B, 322, 322B
Final Drive	125-5538	12.7 mm (0.50 in)	33.80 mm (13 in)	173-6703	Gen III
Final Drive	8E-6327	12.7 mm (0.50 in)	57.79 cm (22.75 in)	9U-5691	375
Final Drive	109-5730	16.0 mm (0.62 in)	48.00 cm (18.9 in)	131-3345	5130B

FT2770 Leak Test Tooling

SMCS Code: 4052-034
Model: 375, 385B, and 5090B Excavators with SMR Final Drive Seals
Warranty: None



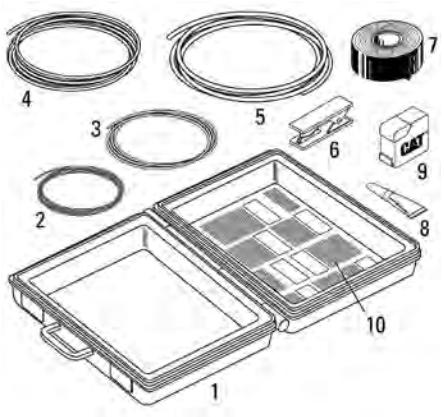
- Used to test sealing capability of SMR final drive seal after rebuild

NOTE:
Do not exceed 103 kPa (15 PSI) during final drive leak test.

Item	Part Number	Description
1	3T-0811	Adapter (STOR)
2	7M-8485	Seal - O-ring - STOR
3	8T-0853	Pressure Gauge, 0 - 400 kPa (0 - 60 PSI)
4	2D-7325	Pipe Tee
5	4C-7121	Nipple
6	4C-7090	Valve
7	4C-7156	Fitting

161-4350 Duo-Cone Seal Installation Kit
Essential Tool

SMCS Code: 4050-016
Model: 312 and 312B Excavators (Grenoble Version) and 460, 465, 480, and 485 Lexion Combines
Warranty: Six Months



- Used to install Duo-Cone seals in final drive assemblies
- Also used to install Duo-Cone seals when recommended installer is not available — an excellent addition to every service truck
- Cord stock acts as a spacer to prevent toric seal from rolling or twisting during seal installation
- Offers a less expensive alternative to rigid seal installers when servicing components that rarely need repair
- Cord stock material: Buna N
- Cord stock length: 6.1 m (20 ft)

References

RENR1113, 312B Excavator Machine System Disassembly and Assembly
SENR6139, 311 and 312 Excavator Machine System Disassembly and Assembly
RENR1645, 460 and 465, RENR1708 480 and 485

NOTE:

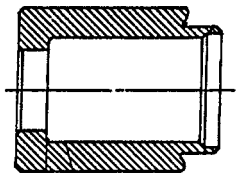
Be sure to always check assembled height of Duo-Cone seals in at least four places, 90° apart. If the difference in height is more than 1 mm (0.04 in), reinstall the seal. A 6V-3075 Dial Indicator, 6V-6167 Contact Point, 3P-1565 Indicator Collet, and a 165-8958 Indicator Base (plastic) can be used to check the assembled height.

Item	Description	Diameter	Color Code Stripe
2	Cord Stock	3.53 mm (0.139 in)	Green
8	Commercially available adhesive, Cyanoacrylate (Super Glue)		
10	NEEG2825, Decal (Instructions)		
10	NEEG2824, Decal (not shown)		

Item	Part Number	Description	Diameter	Color Code Stripe
1	6V-3073	Case - Plastic	--	--
3	165-5192	Cord Stock	4.78 mm (0.188 in)	Red
4	165-5193	Cord Stock	6.35 mm (0.250 in)	Light blue
5	165-5194	Cord Stock	7.92 mm (0.312 in)	White
6	1U-7648	Tube Cutter	--	--
7	1P-0810	Vinyl Tape	--	--
9	9U-7326	Pocket Tape	--	--
--	161-4350	Duo-Cone Seal Installation Kit	--	--

4C-9632 Seal Installer

SMCS Code: 7561-012
Model: D7H Track-Type Tractor, T414
Warranty: Six Months

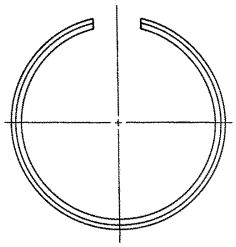


- Used to install Duo-Cone seal in D7H idler
- Eliminates seal rolling or twisting
- Does job faster, easier
- Fits seal assemblies with:
  Toric cross section: 9.47 mm (0.37 in)
  Seal ramp angle: 12.5°

Part Number	Description
4C-9632	Seal Installer

4C-5581 Seal Installer

SMCS Code: 7561-012
Model: D25E, D30E, D40E, D400E Articulated Trucks
Warranty: Six Months



- Used to install Duo-cone brake seal in brake system
- Makes installation faster and much easier
- Eliminates rolling and twisting of seal
- Construction: 2-piece
- Diameter: 254 mm (10.0 in)

Reference
SMHS8483, Special Instruction

Part Number	Description
4C-5581	Seal Installer

4C-9527 Seal Installer

SMCS Code: 7561-012
Model: 623 Scraper, RM293, RM309
Warranty: Six Months

- Used to install Duo-Cone seal
- Easy, reliable seal installation; slotted latches bridge saw cut gap, ensuring that installing lips are held in alignment
- Lower cost due to simpler design with fewer major parts
- Fits seal assemblies with:
  Toric cross section: 6.22 mm (0.244 in)
  Seal ramp angle: 15°

References
SEHS8364, Special Instruction
SEHS8484, Special Instruction
SEHS8825, Special Instruction
SEHS8876, Special Instruction

Part Number	Description
4C-9527	Seal Installer

4C-6582 Installer Assembly

SMCS Code: 7561-012
Model: 992, 994 Wheel Loaders
Warranty: Six Months

- Replaces discontinued 8T-0527 Installer
- Used to install 685.8 mm (27 in) Duo-Cone seals
- Has fewer major parts, is easier to use and provides more reliable seal installation
- Simpler design means lower cost to user
- Slotted latches bridge saw cut gap to ensure that installing lips are held in alignment during seal installation
- Duo-Cone seals consist of 2 steel rings with mating faces positioned by rubber toric rings; torics hold steel rings parallel, concentric, with correct face contact pressure; proper installation requires a special tool
- 4C-6582 is one of a family of different diameters but with a profile to fit seal assemblies with:
  Toric cross section: 12.7 mm (0.5 in)
  Seal ramp angle: 15°

References

SEHS8364, Special Instruction
SEHS8484, Special Instruction
SEHS8825, Special Instruction
SEHS8876, Special Instruction

Part Number	Description
4C-6582	Installer Assembly

220-5726 Seal Installer Assembly

SMCS Code: 4050-012
Model: CP/CS 533, 563, 573, 583C
Warranty: Six Months

- Used to install 7T-2459 Duo-cone Seal Group in propel drive motors
- Seals cannot be correctly installed using any other tooling
- Provides fast and easy installation
- Prevents seal rolling and twisting

References

SEHS8364, Special Instruction, Assembly and Installation of Duo-Cone Seals
KENR3529, Machine Systems Disassembly and Assembly

Toric C/S Diameter	280.03 ± 1.78 mm (11.025 ± 0.070 in)
Seal Ring OD	310.86 mm (12.239 in)

Part Number	Description
220-5726	Seal Installer Assembly

340-0988 Seal Installer Assembly
Essential Tool

SMCS Code: 4050-012
Model: 772X Off-Highway Truck; 621H, 623H, and 627H Wheel Tractor Scraper
Warranty: None

- Used to install 319-3887 Duo-Cone Seal Group in propel drive motors
- Seals cannot be correctly installed using any other tooling
- Provides fast and easy duo-cone seal installation
- Prevents seal rolling and twisting

Reference

SEHS8364, Special Instruction Assembly and Installation of Conventional Duo-Cone Seals

Installer Seal Ring ID	482.6 mm (19.0 in)
Seal Ring OD	475.4 mm (18.7 in)

Part Number	Description
340-0988	Seal Installer Assembly
Service/Repair Parts	
033-8755	Pan Head Screw
5P-0537	Washer (discontinued)
1F-1739	Wing Nut

306-5147 Seal Installer
Essential Tool

SMCS Code: 4050
Model: 267 (CMP1-Up), 277 (CNC1-Up), 287 (CNY1-Up), 267B (CYC1-Up), 277B (MDH1-Up), and 287B (ZSA) Multi Terrain Loader
Warranty: Six Months

- Used to install duo cone seals in final drive motor
- Easy, reliable seal installation
- Securely holds seal to prevent rolling and twisting
- Made from high strength plastic to protect components during installation

References

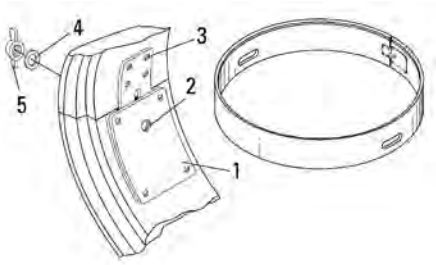
RENR4815, Disassembly and Assembly, 267, 277 and 287 Multi Terrain Loaders Power Train
RENR4884, Disassembly and Assembly, 267B, 277B and 287B Multi Terrain Loaders Machine Systems

Part Number	Description
306-5147	Seal Installer

264-5067 Seal Installer Assembly
Essential Tool

SMCS Code: 4006-012
Model: 793D Off-Highway Truck
Warranty: Six Months

- Used to install 194-7957 or 314-4136 Duo-Cone Seal
- Required for proper installation
- Makes installation faster and easier
- Eliminates rolling and twisting of toric ring
- Made of molded polyurethane for added durability
- Handhold slots for ease of handling and positioning



Reference

SEHS8364, Special Instruction, Assembly and Installation of Conventional Duo-Cone Seals

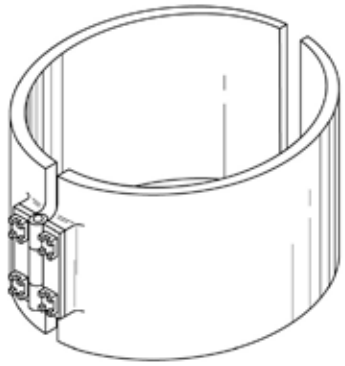
Seal diameter	806.72 mm (31.761 in)
Seal ramp angle	15 degrees
Installer OD	816.12 mm (32.131 in)
Installer width	140.0 mm (5.51 in)
Item	Description
3	Pop Rivet

Item	Part Number	Description
--	264-5067	Seal Installer Assembly
Consists:		
1	1U-5495	Latch Group
2	033-8755	Pan Head Screw
4	5P-0537	Washer (discontinued)
5	1F-1739	Wing Nut

FT1441 Seal Installer

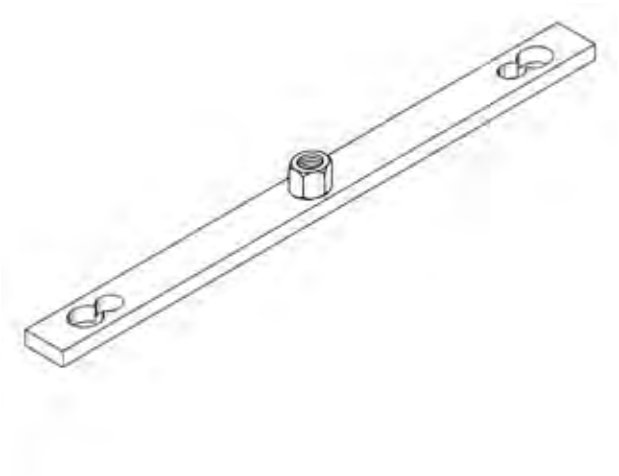
SMCS Code: 4159-017
Model: E200B
Warranty: None

- Fabricated from discontinued 5M-2162 Seal Installer



FT0520 Adapter

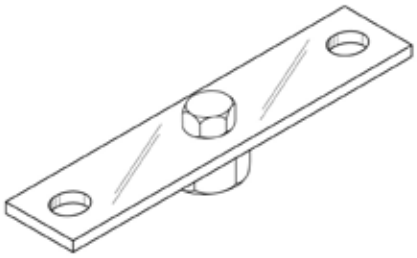
SMCS Code: 4164-012
Model: D8H, D9D, and D9E Tractors
Warranty: None



- Used to check final drive bearing preload
- Material: 1018 Steel

FT2533 Final Drive Torque Bracket

SMCS Code: 4050-036
Model: 24H Motor Grader
Warranty: None



- Used to adjust shaft bearing rolling torque prior to assembling planetary gear set
- Used with 9U-5017 Torque Wrench and 3/4 inch socket
- When tightening bearing, attach bracket in place of 7I-4874 Retainer
- Bracket allows shaft to be rotated during assembly procedure while taking torque measurements
- Plate can be mounted on reverse side for use with a 1 3/8 inch socket to assist in drive chain installation.

Reference

SENR1437, Service Manual Module

Material	SAE1018 Steel
Weight	1.4 kg (3 lb)
Nut	19.05 mm (0.75 in) and 34.93 mm (1.375 in)

Summary of Spanner Wrenches

Spanner Wrench - Tubular

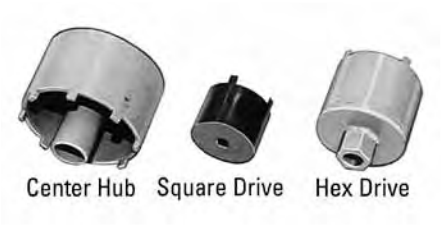
(Continued)

Summary of Spanner Wrenches (Continued)

Part Number	Comments	Number of Tangs	Width of Tangs	Distance Between Tangs
1M-6759		8	42.42 mm (1.67 in)	18.09 cm (7.12 in)
9S-7364[1]		8	11.18 mm (0.44 in)	13.34 cm (5.25 in)
9S-9061[1]		8	11.18 mm (0.44 in)	13.97 cm (5.50 in)
FT1065		4	5.59 mm (0.22 in)	69.85 mm (2.75 in)
FT1516	Use with 6G-4701 and 6G-4702 Nuts			
FT1517	Use with 6G-4701 and 6G-4703 Nuts			
FT1518	Use with 6G-4703 and 6G-4704 Nuts			
FT1519	Use with 6G-4703 and 6G-4705 Nuts			
[1] Not serviced				

Part No.	Comments	No. of Tangs	Width of Tangs	Distance Between Tangs
154-9320	Inset Tangs	4	28.00 mm (1.10 in)	21.08 cm (8.30 in)
165-1670	Inset Tangs	2	28.00 mm (1.10 in)	23.98 cm (9.44 in)
199-4925	--	4	24.60 mm (0.97 in)	22.89 cm (9.01 in)
1P-2381	--	Double 4 and 4	3.96 mm (0.16 in)	52.32 mm (2.06 in), 47.75 mm (1.88 in)
4C-5500	--	6	--	68.00 mm (2.68 in)
5P-4727	--	4	8.00 mm (0.31 in)	99.72 mm (3.93 in)
6F-3011	--	4	5.56 mm (0.22 in)	60.72 mm (2.39 in)
6F-3013	--	4	n/a	64.29 mm (2.53 in)
7F-1929	--	Double 4 and 4	8.73 mm (0.34 in), 5.56 mm (0.22 in)	51.99 mm (2.05 in), 45.65 mm (1.80 in)

Spanner Wrench - Face Slotted



Part Number	Drive Size	Clearance Diameter	Number of Tangs	Width of Tangs	Distance Between Tangs
1M-6759	Bar Drive	18.08 cm (7.12 in)	8	11.2 mm (0.44 in)	18.08 cm (7.12 in)
FT0825	3/4 in square	13.34 cm (5.25 in)	4	11.91 mm (0.47 in)	14.69 cm (5.78 in)
FT1532	Make from 5P-2684				
FT1590	1/2 in square	76.00 mm (2.99 in)	4	5.00 mm (0.20 in)	76.00 mm (2.99 in)
FT1641	1/2 in square	52.60 mm (2.07 in)	4	5.00 mm (0.20 in)	52.60 mm (2.07 in)
FT1867	Used with 2K-0535 Nut				
FT1898	Used with 6D-2646 Nut [1]				
FT1899	Used with 3D-9552 Nut				
FT2338	3/4 in square	10.16 cm (4.00 in)	2	12.70 mm (0.50 in)	89.00 mm (3.50 in)

[1]Discontinued

Part No.	Drive Size	Clearance Diameter	No. of Tangs	Width of Tangs	Distance Between Tangs
126-6609	3/4 in square	22.19 cm (8.74 in)	4	14.60 mm (0.57 in)	23.26 cm (9.16 in)
127-9304	1 7/16 in hex	15.05 cm (5.92 in)	6	12.70 mm (0.50 in)	13.48 cm (5.30 in)
129-3253	1 in square	17.78 cm (7.00 in)	4	5.50 mm (0.22 in)	13.70 cm (5.39 in)
129-3254	1 in square	16.51 cm (6.50 in)	4	5.50 mm (0.22 in)	14.70 cm (5.79 in)
132-8263	7/16 in hex	8.27 mm (0.33 in)	2	2.21 mm (0.09 in)	8.27 mm (0.33 in)
135-9814	1 7/16 in hex	13.70 cm (5.40 in)	6	10.00 mm (0.39 in)	11.83 cm (4.70 in)
135-9817	1 3/16 in hex	69.80 mm (2.75 in)	6	7.50 mm (0.30 in)	54.80 mm (2.16 in)
142-4212	1 7/8 in hex	47.60 mm (1.87 in)	2 sector	47.60 mm (1.87 in)	47.60 mm (1.87 in)
150-1716	3/4 in square	25.40 mm (1 in)	4	9.53 mm (0.38 in)	49.96 mm (1.96 in)
156-5875	1 in square	27.80 cm (10.94 in)	4	27.80 mm (1.09 in)	27.80 cm (10.94 in)
177-9795	1 7/8 in hex	95.25 mm (3.75 in)	2	17.0 mm (0.67 in)	61.0 mm (2.40 in)
199-6557	--	26.67 cm (10.50 in)	2	11.80 mm (0.46 in)	29.08 cm (11.45 in)
1M-6760	Bar Drive	18.08 cm (7.12 in)	8	--	18.08 cm (7.12 in)
1U-5833	1 7/16 in hex	11.64 cm (4.58 in)	12	9.40 mm (0.37 in)	10.48 cm (4.12 in)
1U-8855	3/4 in square	82.55 mm (3.25 in)	4	4.32 mm (0.17 in)	17.39 cm (6.85 in)
212-8144	1/2 in square	0.638 mm (0.03 in)	2	n/a	0.44 mm (0.02 in)
239-7305	3/4 in square	14.80 cm (5.83 in)	6	6.50 mm (0.26 in)	13.50 cm (5.31 in)
240-8274	1 7/16 in hex	10.94 cm (4.31 in)	4	9.20 mm (0.36 in)	74.00 mm (2.91 in)
243-6532	1/2 in square	64.0 mm (2.50 in)	4	61.0 mm (0.24 in)	64 mm (2.50 in)
246-1149	1/2 in square	90 mm (3.54 in)	4	10.00 mm (0.39 in)	--
246-1150	1/2 in square	80 mm (3.15 in)	4	10.00 mm (0.39 in)	--
2P-2317	1/2 in square	34.93 mm (1.38 in)	4	4.06 mm (0.16 in)	34.93 mm (1.38 in)
305-4538	1 in square	12.00 cm (4.72 in)	6	18.0 mm (0.70 in)	10.00 cm (3.93 in)
4C-4058	1 7/16 in hex	14.76 cm (5.80 in)	8	12.20 cm (4.8 in)	12.80 mm (0.50 in)
4C-6369	3/4 in square	12.70 cm (5.00 in)	4	9.52 mm (0.37 in)	10.30 cm (4.05 in)

(Continued)

Spanner Wrench - Face Slotted (Continued)

Part No.	Drive Size	Clearance Diameter	No. of Tangs	Width of Tangs	Distance Between Tangs
4C-6987	1/2 in square	69.85 mm (2.75 in)	2 flats	--	65.03 mm (2.56 in)
4C-9416	1/2 in square	27.5 mm (1.08 in)	4	6.24 mm (0.25 in)	80.75 mm (3.18 in)
5P-0316	3/4 in square	11.11 cm (4.38 in)	4	8.89 mm (0.35 in)	11.11 cm (4.38 in)
5P-0964	1/2 in square	73.20 mm (2.88 in)	4	9.00 mm (0.35 in)	73.20 mm (2.88 in)
5P-2190	1/2 in square	31.75 mm (1.25 in)	4	4.06 mm (0.16 in)	31.75 mm (1.25 in)
5P-2684	3/4 in square	96.04 mm (3.78 in)	4	13.20 mm (0.52 in)	96.04 mm (3.78 in)
5P-2978	3/4 in square	12.40 cm (4.88 in)	8	8.90 mm (0.35 in)	12.40 cm (4.88 in)
5P-3044	3/4 in square	16.51 cm (6.50 in)	8	10.00 mm (0.39 in)	16.51 cm (6.50 in)
5P-3518	1/2 in square	24.00 mm (0.94 in)	4	2.75 mm (0.11 in)	24.00 mm (0.94 in)
5P-4201	3/4 in square	15.70 cm (5.96 in)	8	6.00 mm (0.24 in)	15.70 cm (6.18 in)
5P-4202	3/4 in square	12.00 cm (4.72 in)	8	6.00 mm (0.24 in)	12.00 cm (4.72 in)
5P-4204	3/4 in square	10.67 cm (4.20 in)	8	7.00 mm (0.28 in)	10.67 cm (4.20 in)
5P-6153	3/4 in square	93.68 mm (3.69 in)	4	8.74 mm (0.34 in)	93.68 mm (3.69 in)
5P-8636	1 in square	15.24 cm (6.0 in)	5	27.80 mm (1.09 in)	--
5P-8638	1 in square	15.24 cm (6.0 in)	6	27.80 mm (1.09 in)	--
6V-0005	1/2 in square	13.65 cm (5.38 in)	4	10.00 mm (0.39 in)	13.65 mm (5.38 in)
6V-0096	Handle	20.6 mm (0.81 in)	2	--	--
6V-4041	3/4 in square	79.38 mm (3.13 in)	4	6.10 mm (0.24 in)	79.76 mm (3.14 in)
6V-4070	3/4 in square	98.43 mm (3.88 in)	4	6.35 mm (0.25 in)	79.76 mm (3.14 in)
6V-4072	3/4 in square	88.90 mm (3.50 in)	4	6.35 mm (0.25 in)	69.84 mm (2.75 in)
6V-4073	3/4 in square	12.07 cm (4.75 in)	4	6.35 mm (0.25 in)	10.00 cm (3.94 in)
6V-4074	3/4 in square	11.11 cm (4.38 in)	4	6.35 mm (0.25 in)	91.92 mm (3.62 in)
8T-0521	5/8 in hex	84.00 mm (3.31 in)	6	6.56 mm (0.26 in)	71.0 mm (2.79 in)
9U-6626	1/2 in square	31.40 mm (1.24 in)	4	4.70 mm (0.19 in)	42.50 mm (1.67 in)

Spanner Wrench - Special Large Socket

Part Number	Hex Size	Usable Depth
3/4 in Drive		
FT3030	36.0 mm (1.42 in)	57.2 mm (2.25 in)
FT3031	46.0 mm (1.81 in)	66.7 mm (2.63 in)
FT3032	50.0 mm (1.97 in)	73.2 mm (2.88 in)
1.00 in Drive		
FT3034	54.0 mm (2.13 in)	82.6 mm (3.25 in)

Part Number	Hex Size	Usable Depth
1/2 in Drive		
4C-6172[1]	28.7 mm (1.13 in)	76.2 mm (3.00 in)
3/4 in Drive		
125-5723	11.51 cm (4.53 in)	25.4 mm (1.00 in)
1B-4657	69.9 mm (2.75 in)	11.43 cm (4.50 in)
1U-6689	88.9 mm (3.50 in)	22.2 mm (0.875 in)
1U-6690	10.20 cm (4.00 in)	16.00 cm (6.30 in)
1U-6691	13.97 cm (5.50 in)	20.07 cm (7.90 in)
1U-6692	14.60 cm (5.75 in)	20.07 cm (7.90 in)
268-2866	10.60 cm (4.18 in)	88.9 mm (3.50 in)
292-4949	11.75 cm (4.625 in)	25.4 mm (1.00 in)
2B-1730	86.1 mm (3.39 in)	11.43 cm (4.50 in)

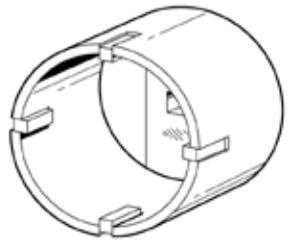
(Continued)

Spanner Wrench - Special Large Socket (Continued)

Part Number	Hex Size	Usable Depth
3/4 in Drive (Continued)		
2B-1731	92.2 mm (3.63 in)	11.43 cm (4.50 in)
3B-6352	66.8 mm (2.63 in)	11.43 cm (4.50 in)
5P-0954	76.2 mm (3.00 in)	11.43 cm (4.50 in)
5P-3540	88.9 mm (3.50 in)	11.43 cm (4.50 in)
7M-7809	73.2 mm (2.88 in)	18.42 cm (7.25 in)

[1] Special for removal of solenoid valves on counter shaft transmission

Spanner Wrench - Internal Slotted



Part Number	Drive	Number of Keys	Clearance Diameter	Inside Key Diameter	Key Width
FT0529	3/4 in hex	4	--	--	--
FT0553	Hex nut	4	13.00 cm (5.12 in)	11.91 cm (4.69 in)	7.36 mm (0.29 in)
FT0554	Hex nut	4	11.02 cm (4.34 in)	7.30 mm (0.29 in)	10.05 cm (3.96 in)
FT1846	1/2 in square	4	89.15 mm (3.51 in)	81.22 mm (3.20 in)	7.93 mm (0.31 in)
FT1847	1/2 in square	4	11.50 cm (4.51 in)	10.19 cm (4.01 in)	7.93 mm (0.31 in)
FT1848	1/2 in square	4	13.36 cm (5.26 in)	5.84 mm (0.23 in)	12.19 cm (4.80 in)
FT1931	1 1/2 in square	4	12.70 cm (5.00 in)	11.70 cm (4.61 in)	9.02 mm (0.36 in)
FT2929	3/4 in square	3	76.40 mm (3.00 in)	76.40 mm (3.00 in)	6.50 mm (0.25 in)

Part No.	Drive	No. of Keys	Clearance Diameter	Inside Key Diameter	Key Width
120-9877	3/4 in square	4	13.97 cm (5.50 in)	13.40 cm (5.28 in)	11.00 mm (0.43 in)
125-4634	3/4 in square	4	11.43 cm (94.50 in)	11.65 cm (4.59 in)	10.00 mm (0.39 in)
125-9787	1/2 in square	4	50.32 mm (1.98 in)	60.00 mm (2.36 in)	6.35 mm (0.25 in)
126-6608	3/4 in square	4	21.41 cm (8.43 in)	23.70 cm (9.33 in)	14.30 mm (0.56 in)
126-6609	3/4 in square	4	26.04 cm (10.25 in)	23.26 cm (9.08 in)	19.05 mm (0.75 in)
126-6901	3/4 in square	6	80.60 mm (3.17 in)	73.34 mm (2.89 in)	6.35 mm (0.25 in)
127-8463	--	2	41.70 cm (16.42 in)	39.10 cm (15.39 in)	25.50 mm (1.00 in)
127-8464	--	2	40.60 cm (15.98 in)	45.72 cm (18.00 in)	25.50 mm (1.00 in)
129-3253	1 in square	4	73.00 mm (2.87 in)	13.70 cm (5.39 in)	9.52 mm (0.37 in)
129-3254	1 in square	4	79.32 mm (3.12 in)	15.80 cm (6.22 in)	9.52 mm (0.37 in)
140-1770	3/4 in square	6	15.55 cm (6.12 in)	15.55 cm (6.12 in)	9.20 mm (0.36 in)
140-1833	1 in square	4	64.90 mm (2.56 in)	85.66 mm (3.37 in)	7.35 mm (0.29 in)
140-3073	1/2 in square	4	47.62 mm (1.87 in)	48.90 mm (1.93 in)	3.50 mm (0.14 in)
141-3255	3/4 in square	4	12.07 cm (4.75 in)	11.30 cm (4.45 in)	4.75 mm (0.19 in)
147-3508	Bar Drive	2	82.55 mm (3.25 in)	65.65 mm (2.58 in)	16.90 mm (0.67 in)
152-7159	1/2 in square	4	44.45 mm (1.75 in)	53.72 mm (2.11 in)	6.02 mm (0.24 in)
154-6179	1 in square	4	13.34 cm (5.25 in)	13.10 cm (5.16 in)	11.00 mm (0.43 in)
161-8957	3/4 in square	4	--	90.50 mm (3.56 in)	--
174-9465	3/4 in square	3	63.50 mm (2.50 in)	77.66 mm (3.06 in)	6.50 mm (0.25 in)

(Continued)

Spanner Wrench - Internal Slotted (Continued)

Part No.	Drive	No. of Keys	Clearance Diameter	Inside Key Diameter	Key Width
174-9468	3/4 in square	3	79.38 mm (3.13 in)	91.32 mm (3.60 in)	7.30 mm (0.29 in)
174-9536	1/2 in square	4	53.98 mm (2.13 in)	64.00 mm (2.52 in)	5.85 mm (0.23 in)
174-9696	3/4 in square	3	76.20 mm (3.00 in)	87.00 mm (3.43 in)	10.70 mm (0.42 in)
176-0404	1 in square	4	95.25 mm (3.75 in)	10.62 cm (4.18 in)	11.50 mm (0.45 in)
184-7409	1 in square	4	20.96 cm (8.25 in)	23.62 cm (9.30 in)	16.00 mm (0.63 in)
1P-2381	1/2 in square	Double, 4 and 4	40.49 mm (1.59 in), 40.49 mm (1.59 in)	52.32 mm (2.06 in), 47.75 mm (1.88 in)	3.96 mm / 0.16 in, 3.96 mm (0.16 in)
1U-6230	3/4 in square	4	11.43 cm (4.50 in)	10.58 cm (4.16 in)	9.00 mm (0.35 in)
1U-7643	3/4 in square	6	75.60 mm (2.98 in)	68.30 mm (2.69 in)	6.75 mm (0.27 in)
1U-8306	3/4 in square	4	54.00 mm (2.13 in)	53.18 mm (2.09 in)	4.76 mm (0.19 in)
1U-9478	3/4 in square	4	92.50 mm (3.64 in)	58.75 mm (2.31 in)	10.00 mm (0.39 in)
202-0453	3/4 in square	4	13.25 cm (5.22 in)	12.10 cm (4.76 in)	10.50 mm (0.41 in)
207-0757	1/2 in square	4	60.50 mm (2.38 in)	92.50 mm (3.64 in)	6.00 mm (0.24 in)
219-0476	3/4 in square	4	92.00 mm (3.62 in)	85.50 mm (3.37 in)	7.30 mm (0.29 in)
220-8428	Handle	4	69.85 mm (2.75 in)	69.85 mm (2.75 in)	--
220-8430	Handle	--	47.63 mm (1.88 in)	47.63 mm (1.88 in)	--
224-8958	1 in square	4	15.88 cm (6.25 in)	18.73 cm (7.37 in)	11.90 mm (0.47 in)
225-4125	3/4 in square	4	10.16 cm (4.00 in)	10.41 cm (4.13 in)	9.02 mm (0.36 in)
230-7923	3/4 in square	4	12.15 cm (4.78 in)	11.33 cm (4.46 in)	10.50 mm (0.41 in)
246-1149	1/2 in square	4	90.00 mm (3.54 in)	12.00 cm (4.72 in)	10.00 mm (0.39 in)
246-1150	1/2 in square	4	80.00 mm (3.15 in)	12.00 cm (4.72 in)	10.00 mm (0.39 in)
246-5254	3/4 in square	5	94.00 mm (3.70 in)	11.60 cm (4.57 in)	10.00 mm (0.39 in)
246-7504	1 in square	4	28.30 cm (11.14 in)	27.15 cm (10.69 in)	4.57 mm (0.18 in)
248-3310	1/2 in square (Off-center)	4	53.93 mm (2.12 in)	49.08 mm (1.93 in)	4.57 mm (0.18 in)
260-0626	38 mm hex	4	12.70 cm (5.00 in)	11.90 cm (4.68 in)	8.00 mm (0.315 in)
279-4142	3/4 in square	4	10.58 cm (4.163 in)	99.00 mm (3.90 in)	7.38 mm (0.291 in)
304-5800	3/4 in square	3	69.85 mm (2.75 in)	77.66 mm (3.08 in)	9.52 mm (0.37 in)
4C-5500	Offcenter	6	68.00 mm (2.68 in)	--	--
4C-6369	3/4 in square	4	11.44 cm (4.50 in)	10.30 cm (4.06 in)	9.28 mm (0.37 in)
4C-8500	3/4 in square	4	15.88 cm (6.25 in)	14.86 cm (5.85 in)	10.90 mm (0.43 in)
4C-8502	3/4 in square	4	83.00 mm (3.27 in)	10.40 cm (4.09 in)	10.00 mm (0.39 in)
4C-8757	3/4 in square	2	12.70 cm (5.00 in)	11.70 cm (4.61 in)	9.50 mm (0.37 in)
4C-9439	1/2 in square	4	57.15 mm (2.25 in)	52.93 mm (2.08 in)	5.16 mm (0.20 in)
5P-4727	Chain Wrench	4	99.72 mm (3.93 in)	99.72 mm (3.91 in)	8.00 mm (0.31 in)
5P-4756	1/2 in square	4	66.68 mm (2.63 in)	60.30 mm (2.37 in)	4.80 mm (0.19 in)
5P-4770	1/2 in square	4	10.80 cm (4.25 in)	89.00 mm (3.50 in)	6.60 mm (0.26 in)
5P-7323	3/4 in square	4	10.80 cm (4.25 in)	10.03 cm (3.95 in)	8.00 mm (0.31 in)
6F-3011	Bar Drive	4	--	60.72 mm (2.39 in)	5.56 mm (0.22 in)
6F-3013	Bar Drive	4	--	64.29 mm (2.53 in)	--
6V-2065	3/4 in square	4	76.00 mm (2.99 in)	79.76 mm (3.14 in)	6.10 mm (0.24 in)
6V-3133	3/4 in square	4	98.00 mm (3.86 in)	99.72 mm (3.91 in)	9.28 mm (0.37 in)
6V-3134	3/4 in square	4	11.20 cm (4.41 in)	13.67 cm (5.38 in)	12.25 mm (0.48 in)
6V-4070	3/4 in square	4	82.55 mm (3.25 in)	79.76 mm (3.14 in)	6.24 mm (0.25 in)
6V-4072	3/4 in square	4	73.02 mm (2.87 in)	69.84 mm (2.75 in)	6.24 mm (0.25 in)
6V-4073	3/4 in square	4	10.48 cm (4.12 in)	10.00 cm (3.94 in)	9.26 mm (0.36 in)
6V-4074	3/4 in square	4	95.25 mm (3.75 in)	92.90 mm (3.66 in)	9.26 mm (0.36 in)

(Continued)

Spanner Wrench - Internal Slotted (Continued)

Part No.	Drive	No. of Keys	Clearance Diameter	Inside Key Diameter	Key Width
6V-7920	3/4 in square	4	85.72 mm (3.37 in)	86.80 mm (3.42 in)	5.90 mm (0.23 in)
7F-1929	Bar Drive	Double, 4 and 4	--	52.0 mm (2.05 in)	8.73 mm (0.34 in)
8T-2838	3/4 in square	4	11.18 cm (4.40 in)	10.48 cm (4.13 in)	9.26 mm (0.36 in)
8T-2839	3/4 in square	4	11.75 cm (4.62 in)	11.12 cm (4.38 in)	9.26 mm (0.36 in)
8T-2843	3/4 in square	4	76.20 mm (3.00 in)	71.50 mm (2.81 in)	8.90 mm (0.35 in)
9U-6237	3/4 in square	4	10.16 cm (4.00 in)	10.18 cm (4.01 in)	9.26 mm (0.36 in)
9U-7523	3/4 in square	4	12.07 cm (4.75 in)	11.10 cm (4.37 in)	9.50 mm (0.37 in)

Spanner Wrench - Flat Faced with Pin

Part No.	Drive	No. of Pins	Clearance Diameter	Pin Distance	Pin Diameter
FT1393	Handle	2		17.20 cm (6.77 in)	12.70 mm (0.50 in)
FT1449	Handle	2	12.07 cm (4.75 in)	12.07 cm (4.75 in)	12.70 mm (0.50 in)
FT1499	Handle	4	95.50 mm (3.76 in)	12.50 cm (4.92 in)	13.50 mm (0.53 in)
FT2414	Handle	2			
FT2565	Handle	2	76.00 mm (2.99 in)	10.00 cm (3.94 in)	11.96 mm (0.47 in)
FT2566	Handle	2	94.00 mm (3.70 in)	12.00 cm (4.72 in)	15.98 mm (0.63 in)
FT2567	Handle	2	12.20 cm (4.80 in)	15.00 cm (5.91 in)	15.98 mm (0.63 in)

Spanner Wrench - Flat Faced with Pin

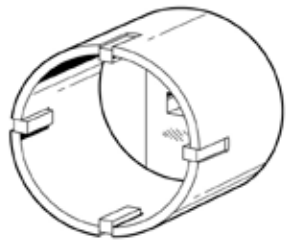
Part No.	Drive	No. of Pins	Clearance Diameter	Pin Distance	Pin Diameter
FT2567	Handle	2	12.20 cm (4.80 in)	15.00 cm (5.91 in)	15.98 mm (0.63 in)
FT2568	Handle	2	14.20 cm (5.59 in)	17.00 cm (6.69 in)	15.98 mm (0.63 in)
FT2569	Handle	2	14.20 cm (5.59 in)	18.00 cm (7.09 in)	15.98 mm (0.63 in)
FT2570	Handle	2	12.40 cm (4.88 in)	18.00 cm (7.09 in)	21.96 mm (0.86 in)
FT2571	Handle	2	11.60 cm (4.57 in)	18.00 cm (7.09 in)	27.96 mm (1.10 in)
FT2572	Handle	2	16.40 cm (6.46 in)	19.00 cm (7.48 in)	15.98 mm (0.63 in)
FT2573	Handle	2	15.00 cm (5.91 in)	20.00 cm (7.87 in)	21.96 mm (0.86 in)
FT2574	Handle	2	16.00 cm (6.30 in)	21.00 cm (8.27 in)	27.96 mm (1.10 in)
FT2575	Handle	2	16.00 cm (6.30 in)	22.00 cm (8.66 in)	27.96 mm (1.10 in)
FT2576	Handle	2	19.40 cm (7.64 in)	23.00 cm (9.06 in)	21.96 mm (0.86 in)
FT2577	Handle	2	19.40 cm (7.64 in)	24.00 cm (9.84 in)	21.96 mm (0.86 in)
FT2578	Handle	2	19.40 cm (7.64 in)	25.00 cm (9.84 in)	21.96 mm (0.86 in)
FT2579	Handle	2	22.60 cm (8.90 in)	27.50 cm (10.83 in)	21.96 mm (0.86 in)
FT2580	Handle	2	27.00 cm (10.63 in)	33.00 cm (12.99 in)	27.96 mm (1.10 in)
FT2593	Handle	2	--	25.40 mm (1.00 in)	9.52 mm (0.37 in)
FT2743	Handle	2	14.20 cm (5.59 in)	18.00 cm (7.09 in)	11.98 mm (0.47 in)
FT3116	1 in hex	2	--	20.00 cm (7.87 in)	2.38 mm (0.094 in)
FT3116	1 in hex	2	--	10.00 cm (3.94 in)	3.17 mm (0.125 in)

(Continued)

Spanner Wrench - Flat Faced with Pin (Continued)

Part No.	Drive	No. of Pins	Clearance Diameter	Pin Distance	Pin Diameter
126-0413	1 1/8 in hex	2	28.00 mm (1.10 in)	40.00 mm (1.575 in)	4.74 mm (0.19 in)
126-5759	Handle	2	31.75 mm (1.25 in)	68.28 mm (2.69 mm)	10.59 mm (0.42 in)
126-5760	Handle	3	1.13 mm (0.04 in)	3.63 mm (0.14 in)	1.50 mm (0.06 in)
129-4542	1 in square	2	10.82 cm (4.62 in)	20.40 cm (8.03 in)	15.88 mm (0.63 in)
134-2570	9/16 in hex	2	21.00 mm (0.83 in)	28.50 mm (1.12 in)	4.37 mm (0.17 in)
149-5168	1/2 in square	3	--	12.99 cm (5.11 in)	4.73 mm (0.19 in)
176-6537	1 in square	2	Flat Plate	68.00 mm (2.68 in)	19.55 mm (0.77 in)
176-6538	1 in square	2	Flat Plate	36.00 mm (1.42 in)	19.55 mm (0.77 in)
202-7965	1/2 in square	2	Flat Plate	81.00 mm (3.19 in)	6.60 mm (0.26 in)
208-6033	3/4 in square	2	29.21 cm (11.50 in)	31.50 cm (12.40 in)	12.70 mm (0.50 in)
235-2785	Handle	2	--	--	--
246-5254	3/4 in square	5	94.00 mm (3.70 in)	Non-symmetrical	10 mm (0.39 in)
246-9300	5/16 in hex	2	10.00 mm (0.039 in)	6.05 mm (0.24 in)	1.60 mm (0.06 in)
251-4365	3/4 in	3	10.50 cm (4.13 in)	Non-symmetrical	9.52 mm (0.37 in)
263-2153	Handle	6	80.00 mm (3.15 in)	11.00 mm (0.43 in)	58 mm (2.28 in)
281-2587	30 mm hex	2	53.97 mm (2.12 in)	66.00 mm (2.60 in)	7 mm (0.28 in)
292-8544	--	4	26.67 cm (10.50 in)	24.80 cm (9.76 in)	9.50 mm (0.37 in)
4C-4767	3/4 in square	4	94.95 mm (3.74 in)	11.30 cm (4.45 in)	9.81 mm (0.39 in)
4C-8249	Key	4	--	12.60 cm (4.96 in)	10.50 mm (0.41 in)
4C-8345	3/4 in square	4	--	16.00 cm (6.30 in)	9.52 mm (0.37 in)
4C-8346	3/4 in square	4	10.40 cm (4.09 in)	13.40 cm (5.28 in)	9.52 mm (0.37 in)
4C-8347	3/4 in square	4	90.00 mm (3.54 in)	12.00 cm (4.72 in)	9.52 mm (0.37 in)
4C-8348	3/4 in square	4	12.20 cm (4.80 in)	14.50 cm (5.71 in)	9.52 mm (0.37 in)
4C-8349	3/4 in square	4	15.20 cm (5.98 in)	17.50 cm (6.89 in)	9.52 mm (0.37 in)
4C-9874	1/2 in	2	40.00 mm (1.57 in)	10.80 cm (4.25 in)	10.46 mm (0.41 in)
6V-3158	1 in square	8	10.50 cm (4.13 in)	13.42 mm (5.28 in)	9.52 mm (0.37 in)
8T-9289	1 in square	2	Flat Plate	Adjustable	--
9U-5131	1 1/8 in hex	5 sets of 2	11.30 cm (4.45 in)	--	--
9U-5919	1 in square	2	12.70 cm (5.00 in)	20.40 cm (8.03 in)	15.88 mm (0.63 in)
9U-6110	3/4 in square	2	10.16 cm (4.00 in)	72.00 mm (2.83 in)	9.52 mm (0.37 in)
9U-6111	3/4 in square	4	13.97 cm (5.50 in)	10.60 cm (4.17 in)	9.52 mm (0.37 in)
9U-7346	1 in square	2	22.86 cm (9.00 in)	25.00 cm (9.84 in)	10.96 mm (0.43 in)
9U-7431	1 1/2 in hex	2	88.90 mm (3.50 in)	14.00 cm (5.51 in)	6.17 mm (0.24 in)
9U-7432	1 1/2 in hex	2	11.43 cm (4.50 in)	16.40 cm (6.46 in)	6.17 mm (0.24 in)
9U-7433	1 1/2 in hex	4	13.28 cm (5.23 in)	17.60 cm (6.93 in)	9.34 mm (0.37 in)
9U-7434	1 1/2 in hex	4	17.73 cm (6.98 in)	22.25 cm (8.75 in)	9.34 mm (0.37 in)
9U-7435	1 1/2 in hex	4	17.73 cm (6.98 in)	22.25 cm (8.75 in)	6.17 mm (0.24 in)
9U-7436	1 1/2 in hex	4	21.22 cm (8.35 in)	26.20 cm (10.31 in)	9.34 mm (0.37 in)
9U-7437	1 1/2 in hex	4	21.22 cm (8.35 in)	26.20 cm (10.31 in)	6.17 mm (0.24 in)

Spanner Wrench - Flat Face with Tangs



Part number	Drive Size	Clearance Diameter	Number of Tangs	Width of Tangs	Distance Between Tangs
FT2338	3/4 in square	--	2	12.70 mm (0.50 in)	89.00 mm (3.50 in)
FT2380	1 1/2 in hex	--	4	11.00 mm (0.43 in)	19.50 cm (7.68 in)
FT2381	1 1/2 in hex	--	4	11.00 mm (0.43 in)	17.45 cm (6.87 in)
FT2391	--	--	4	9.50 mm (0.37 in)	16.60 cm (6.54 in)
FT2392	--	--	4	20.64 mm (0.81 in)	14.30 cm (5.63 in)
FT2393	--	--	4	20.64 mm (0.81 in)	10.00 cm (3.94 in)
FT2524	--	--	4	5.58 mm (0.22 in)	85.73 mm (3.38 in)
FT2525	--	--	4	0.56 mm (0.02 in)	5.19 mm (0.20 in)

Part No.	Drive Size	Clearance Diameter	No. of Tangs	Width of Tangs	Distance Between Tangs
141-3255	3/4 in square	13.34 cm (5.25 in)	4	9.50 mm (0.37 in)	11.30 cm (4.45 in)
171-1110	3/4 in hex	44.50 mm (1.75 in)	3	7.90 mm (0.31 in)	11.84 cm (4.66 in)
186-0240	9S-6371 Socket	53.90 mm (2.12 in)	5	12.70 mm (0.50 in)	30.00 cm (11.81 in)
186-0241	9S-6371 Socket	62.80 mm (2.47 in)	5	12.70 mm (0.50 in)	21.60 cm (8.50 in)
1U-8306	3/4 in square	66.70 mm (2.63 in)	4	6.35 mm (0.25 in)	53.18 mm (2.09 in)
224-8958	1 in square	20.96 cm (8.25 in)	4	11.90 mm (0.47 in)	18.73 cm (7.37 in)
230-7923	3/4 in square	13.97 cm (5.49 in)	4	10.90 mm (0.43 in)	11.30 cm (4.45 in)
6V-7920	3/4 in square	10.16 cm (4.00 in)	4	5.60 mm (0.22 in)	86.80 mm (3.42 in)
9U-6237	3/4 in square	10.60 cm (4.17 in)	4	9.02 mm (0.36 in)	10.18 cm (4.00 in)
9U-7398	1 5/16 in hex	--	6	12.70 mm (0.50 in)	28.70 cm (11.30 in)
9U-7399	1 5/16 in hex	--	6	12.70 mm (0.50 in)	22.60 cm (8.90 in)

Spanner Wrench - Hook

Part No.	No. of Keys	Clearance Radius	Notes
FT0624	2	79.25 mm (3.12 in)	--
FT2408	2	12.00 cm (4.72 in)	Adjustable
FT2412	2	13.30 cm (5.24 in)	--

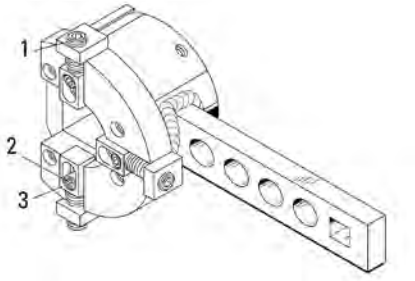
Part No.	No. of Keys	Clearance Radius	Key Depth	Key Diameter	Notes
126-8290	1	26.70 mm (1.05 in)	4.63 mm (0.18 in.)	4.63 mm (0.18 in.)	--
159-0271	1	24.25 mm (0.95 in)	3.20 mm (0.13 in.)	4.75 mm (0.19 in.)	3/8 in square drive
167-3972	1	15.00 mm (0.59 in)	--	4 mm (0.16 in.)	--
1P-2851	1	30.23 mm (1.19 in)	--	--	--
1P-2852	1	41.15 mm (1.62 in)	--	--	--

(Continued)

Spanner Wrench - Hook (Continued)

Part No.	No. of Keys	Clearance Radius	Key Depth	Key Diameter	Notes
1P-2853	1	57.15 mm (2.25 in)	--	--	--
1P-2854	1	76.20 mm (3.00 in)	--	--	--
1P-2856	2	40.00 mm (1.57 in)	21.30 mm (0.84 in.)	10.51 mm (0.41 in.)	1/2 in square drive
1U-7042	1	69.00 mm (2.72 in)	7 mm (0.28 in.)	6.34 mm (0.25 in.)	--
235-2785	2	--	--	--	Handle
280-2059	1	31.8 - 76.2 mm (1.25 - 3.00 in)	--	--	1/2 in square drive
280-2060	1	50.8 - 120.7 mm (2.00 - 4.75 in)	--	--	1/2 in square drive
280-2061	1	11.43 - 15.88 cm (4.50 - 6.25 in)	--	--	1/2 in square drive
4C-8155	1	69.00 mm (2.72 in)	7 mm (0.28 in.)	6.16 mm (0.24 in.)	3/4 in square drive
5F-9693	1	Adjustable	--	--	--
5F-9695	1	Adjustable	--	--	Jaw
5F-9696	1	Adjustable	--	--	Jaw
5F-9697	1	Adjustable	--	--	Pivot Pin
7F-9304	1	Adjustable	--	--	Bolt
7F-9306	1	Adjustable	--	--	--
8S-8303	2	10.16 cm (4.00 in)	--	--	Jaw/Handle
8T-3141	1	31.80 mm (1.25 in)	3.73 mm (0.15 in.)	4.80 mm (0.19 in.)	12.88 mm (1/2 in) square
9U-5120	1	17.20 mm (0.68 in)	4.45 mm (0.18 in.)	4.34 mm (0.17 in.)	9.53 mm (3/8 in) square
9U-6736	2	--	--	--	Adjustable

Spanner Wrench - Hydraulic Cylinder



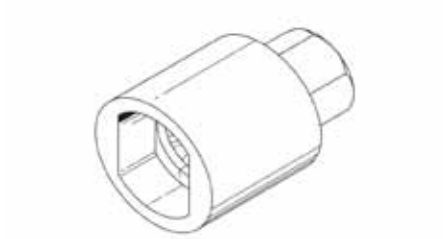
Part No.	Comments	Guide Diameter	No. of Pins	Diameter of Pins (2)	Distance Between Pin Centers (2)	Slot Angle
123-0390	Face	76.20 mm (3.00 in)	2	7.90 mm (0.31 in)	10.16 cm (4.00 in)	--
123-0391	Face	89.00 mm (3.50 in)	2	7.90 mm (0.31 in)	11.44 cm (4.50 in)	--
123-3802	Internal	88.80 mm (3.50 in)	2	11.12 mm (0.44 in)	88.80 mm (3.50 in)	120
123-3803	Internal	88.80 mm (3.50 in)	2	11.12 mm (0.44 in)	88.80 mm (3.50 in)	120
127-8064	Adjustable	12.00 cm (4.72 in)	3	--	12.00 mm (4.72 in)	90
160-0261	Internal	89.00 mm (3.50 in)	--	--	--	--
162-7189	Adjustable	93.00 mm (3.66 in)	2	--	--	120
5P-3520	Adjustable	--	2	--	--	--
8T-0984	Adjustable	--	2	--	--	--
8T-9289	Face	13.97 cm (5.50 in)	2	--	16.51 cm (6.50 in)	--
9U-6123	Face	61.00 mm (2.40 in)	2	6.80 mm (0.27 in)	80.00 mm (3.15 in)	--
9U-7868	Adjustable	11.44 cm (4.50 in)	4	8.70 mm (0.34 in)	11.44 cm (4.50 in)	120
9U-7869	Adjustable	14.72 cm (5.80 in)	4	8.70 mm (0.34 in)	14.72 cm (5.80 in)	120

(Continued)

Spanner Wrench - Hydraulic Cylinder (Continued)

Part No.	Comments	Guide Diameter	No. of Pins	Diameter of Pins (2)	Distance Between Pin Centers (2)	Slot Angle
9U-7872	Internal	88.80 mm (3.50 in)	2	11.09 mm (0.44 in)	--	120
9U-7873	Face	88.80 mm (3.50 in)	2	12.68 mm (0.50 in)	11.10 cm (4.37 in)	--
9U-7874	Internal	88.80 mm (3.50 in)	2	11.09 mm (0.44 in)	--	120
9U-7875	Internal	88.80 mm (3.50 in)	2	11.09 mm (0.44 in)	--	120
9U-7876	Face	88.80 mm (3.50 in)	2	12.68 mm (0.50 in)	13.00 cm (5.12 in)	--
9U-7877	Internal	12.30 cm (4.84 in)	2	15.68 mm (0.62 in)	--	--

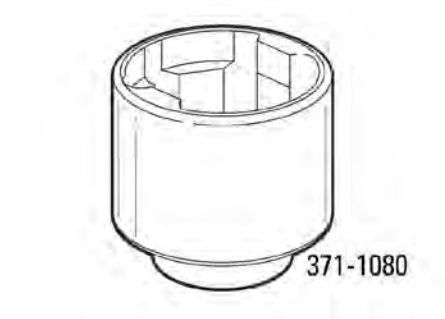
Spanner Wrench - Socket



Part No.	Drive	Clearance Diameter	Distance Across Flats	Counter Bore
142-4212	1 7/8 in hex	47.6 mm (1.87 in)	47.6 mm (1.87 in)	--
193-8100	1 1/2 in square	22.2 mm (0.87 in)	46.2 mm (1.82 in)	44.00 mm (1.73 in)
371-1080	1 in hex[1]	84.5 mm (3.33 in)	65 mm (2.56 in)	20mm (0.78 in)
4C-6987	1/2 in square	69.8 mm (2.75 in)	65 mm (2.56 in)	--

[1] Used to install and remove 215-4099 Nut

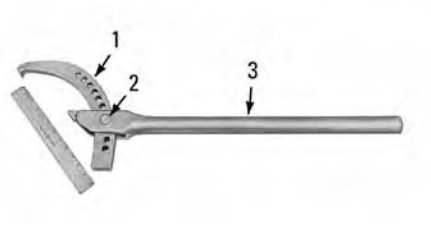
Socket Used to Install and Remove 215-4099 Nut



7F-9306 Adjustable Retaining Nut Spanner Wrench

SMCS Code: 4164-010, 4050-025, 4058-010, 3258-017
Model: D4H, D5B. D6D, D7G, 637D, 637E
Warranty: Six Months

- Specially designed for operations requiring up to 124,5 mkg (900 ft-lb) 1224 Nm torque, such as sprocket retaining nuts, sprocket shaft retaining nuts, and sprocket hub bearing adjusting nuts
- Forged jaws adjust to 11 positions from 121 mm (4 3/4 in) to 324 mm (12 3/4 in) outer diameter.



Item	Description	Size
3	Handle	654 mm (25.75 in) long

Item	Part Number	Description	Size
1	5F-9696	Jaw	19.05 mm (3/4 in) thick
2	7F-9304	Bolt	--
--	7F-9306	Wrench	--

5F-9693 Adjustable Bevel Gear Spanner Wrench

SMCS Code: 4076-025
Model: Most Cat® Final Drive Sprockets
Warranty: Six Months

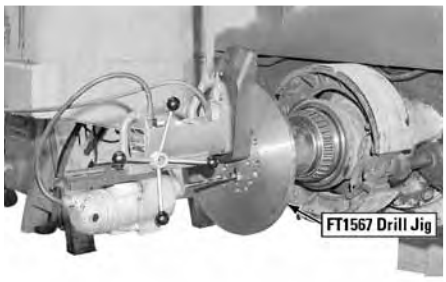
- Equipped with two jaws, one 9.52 mm (3/8 in) thick, to permit it to be used for bevel gear adjustments where space is limited, the other 19.05 mm (3/4 in) thick for heavier operations
- Lightweight
- Forged jaws adjust to eleven positions from 121 mm (4 3/4 in) to 324 mm (12 3/4 in) outer diameter.
- Round handle to permit use of cheater pipe where additional leverage is required
- Not advisable to use on D8 sprocket retaining nut; wrench with offset handle provided for this operation

Item	Description	Size
4	Handle	609.6 mm (24 in) long

Item	Part Number	Description	Size
1	5F-9695	Jaw	9.52 mm (3/8 in) thick
2	5F-9696	Jaw	19.05 mm (3/4 in) thick
3	5F-9697	Pivot Pin	--
--	5F-9693	Wrench	--

FT1567 Drill Jig
FT1675 Spacer

SMCS Code: 4050-023
Model: 621B, 623B, 627B Tractors, 627B Scrapers
Warranty: None



- Used to modify earlier final drive axle housings to provide stronger design
- FT1567 Drill Jig provides fixture for locating additional bolt holes in housings (previously used to add bolt holes to front wheel spindles and bearing retainers on 992C Loaders)
- FT1675 Spacer (not shown) required to retain inner bearing if modification can be performed without removing wheel

Reference
SMHS6941-02, Special Instruction

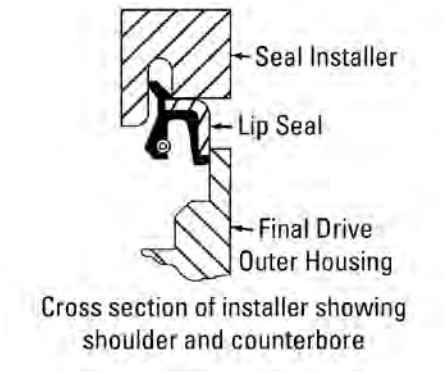
Seal Installers

SMCS Code: 4050-012
Model: 120G, 130G, 12G, 140G, 14G, 16G Motor Graders
Warranty: Six Months

- Used to install lip-type seal on final drive (outer housing)
- Seal installers available in 4 different sizes
- Proper tooling eases seal installation
- Reduces seal damage by not striking seal directly
- Installer designed with shoulder to assure installation force is distributed evenly to metal cage
- Counterbore protects lip of seal during installation (see illustration)
- All seal installers hardened to Rc 37-42 for durability

Part Number	Used with	O.D. x I.D. x Thickness	Weight
9U-6724	--	327 x 268 x 41 mm (12.9 x 10.6 x 1.6 in)	7 kg (15.43 lb)
9U-6725	--	359 x 295 x 41 mm (14.1 x 11.6 x 1.6 in)	8 kg (17.64 lb)
9U-6726	6V-8384 Seal	457 x 394 x 41 mm (18.0 x 15.5 x 1.6 in)	10 kg (22.05 lb)

Cross Section of Installer

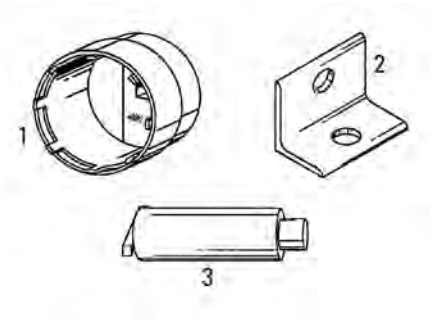


Cross section of installer showing shoulder and counterbore

Motor Grader Tandem Removal and Installation Tooling

SMCS Code: 4064-010
Model: G Series Motor Graders
Warranty: Six Months

- Used to simplify and reduce the time of removing and installing tandem drive housings -- eliminates need to disconnect drive chains
- Allows tandem assembly with sprockets to be removed and installed as a unit -- a pipe or pry bar can be inserted through sprockets to maintain alignment when guide is removed
- Sprocket guides thread directly onto tandem drive axle [33.33 mm (1 5/16 inch) hex head accepts sockets or combination wrenches for easy attachment]
- Tapered extension added to former design allows removal of sprocket guide from tandem assembly after it is removed from motor grader (sprocket guide can now be used to remove remaining tandem)
- The spanner wrenches provide a positive method to engage slots in spanner nut that retains the drive sprocket; a square drive permits use with a ratchet, breaker bar, or torque measuring device
- The lifting brackets provide a place to attach hooks from a suitable lifting device when removing and installing the tandem housings



Item	Part No.	Description
2	FT1723	Lifting Bracket (typical)
2	FT1724	Lifting Bracket (typical)
2	FT1725	Lifting Bracket (typical)
3		Sprocket Guide

Item	**Part No.**	**Description**
1	5P-4201	Wrench Assembly - Spanner
1	5P-4202	Wrench Assembly - Spanner
1	5P-4204	Wrench Assembly - Spanner
1	5P-6153	Wrench Assembly - Spanner
Sprocket Guides		
4	1U-5898	Sprocket Guide
5	1U-5899	Sprocket Guide
6	1U-5900	Sprocket Guide

Motor Grader Tandem Removal and Installation

Motor Grader	Spanner Wrench	Sprocket Guide	Lifting Bracket
16G	5P-4201	1U-5898	FT1725
14G	5P-4202	1U-5899	FT1724
12G, 130G	5P-4204	1U-5900	FT1723
140G, 160G, 120G	5P-6153		FT1723

5P-5228 Adapter

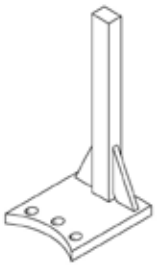
SMCS Code: 4050-025
Model: D8K Tractor, 583K Pipelayer
Warranty: Six Months

- Used (2 required) with existing tools for adjustment of final drive outer bearings on D8K Tractors, effective with 76V479 and 77V-3958, and 583K Pipelayers, effective with 78V510

Part Number	Description
5P-5228	Adapter

FT3011 Bracket Assembly
Essential Tool

SMCS Code: 4050-017
Model: CB534C, CB534D, CB634C, and CB634D Asphalt Compactors
Warranty: None



- Used to provide a reaction point when removing and installing final drive bearing retainer nut
- Used with 6V-6080 Torque Multiplier and 184-7409 Socket
- Makes final drive repair faster and easier

Reference
KENR2843-01, Machine Systems Disassembly and Assembly

Fabricated Tool for 983B Final Drive

SMCS Code: 4050-010
Model: 983B Track Loader
Warranty: None

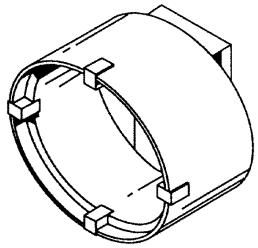
- Used for disassembly and assembly of final drive

Part Number	Description	Use
FT1446	Spanner Wrench	Apply specified torque to nut which secures inner end of sprocket shaft in bevel gear case

184-7409 Retaining Nut Spanner Wrench
Essential Tool

SMCS Code: 4050-017
Model: CS-433C and CP433C Vibratory Compactors, CB534C and CB634C Asphalt Compactors, PM465 and PM565B Cold Planers
Warranty: Six Months

- Used to remove, install, and tighten final drive bearing retaining nut
- Used with standard 1 inch square drive tools
- Pilots on outside diameter of bearing retaining nut providing positive engagement
- Makes final drive repair faster and easier
- Heat-treated for maximum durability



References
KENR2996, Machine Systems Disassembly and Assembly module for CS432C, CS433C, and CP433C Vibratory Compactors
KENR2843-01, Machine Systems Disassembly and Assembly module for CB534C Vibratory Compactor

Overall length	95.4 mm (3.755 in)
Inside diameter	210.8 mm (8.299 in)
Number of teeth	4, equally spaced
Tooth width	15.9 mm (0.625 in)
Square drive	1 in

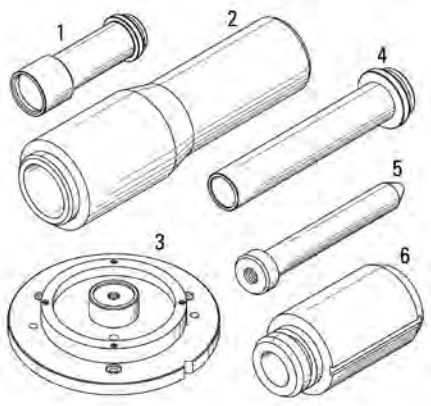
Part Number	Description
184-7409	Retaining Nut Spanner Wrench

Gearbox Disassembly and Assembly Tooling
Essential Tool

SMCS Code: 4050-017
Model: AP655 Asphalt Paver
Warranty: Six Months

- Used to disassemble and assemble 219-1962 Comber Drive

Reference
KENR5033, Service Manual Module



Item	Part Number	Description
1	254-3839	Sleeve
2	254-3840	Guide
3	254-7270	Base Plate
4	254-7272	Driver
5	254-7273	Locating Pin
6	254-7274	Guide

Bearing Locknut Tools

SMCS Code: 4050-017, 0602
Model: Compaction Equipment: CS/CP433C, 533C, 563C, 583C; CB534B, 534C, 634B, 634C; Asphalt Paver: 1055, 2455
Warranty: Six Months

- Used to remove and install final drive bearing locknut when replacing bearings or Duo-Cone seals
- Used with standard torque wrench to obtain up to 950 N·m (700 ft-lb) of torque
- Four spanner teeth provide positive engagement with locknut (virtually eliminates slippage and locknut damage)
- Locknut cannot be properly installed using hammer and punch
- Spanner wrenches are heat-treated for durability and long life

(Continued)

Bearing Locknut Tools (Continued)

SMCS Code: 4050-017, 0602
Model: Compaction Equipment: CS/CP433C, 533C, 563C, 583C; CB534B, 534C, 634B, 634C; Asphalt Paver: 1055, 2455
Warranty: Six Months

126-6608 Locknut Spanner Wrench

- Used on CP/CS433C, CB534B, CB534C, CB634B, and CB634C Compaction Equipment
- Designed to fit inside housing bore
- Top of spanner wrench is designed to extend out beyond face of housing (allows use of torque wrench without need for an extension)

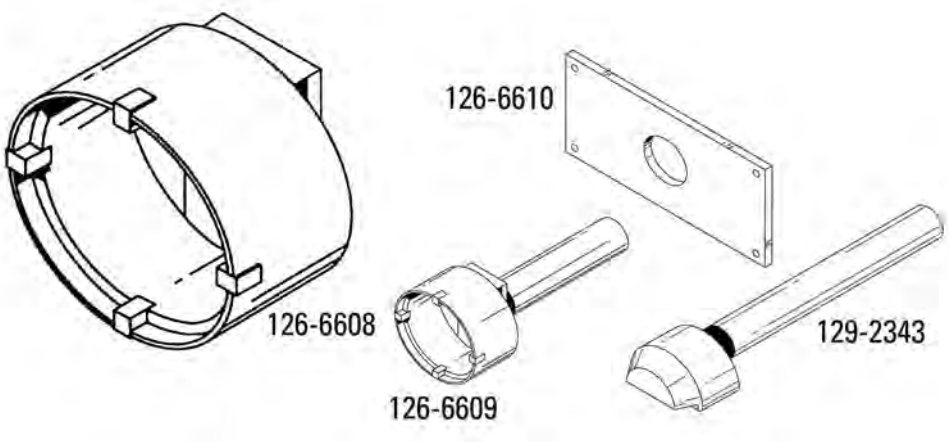
126-6609 Locknut Spanner Wrench, 126-6610 Alignment Bracket, and 129-2343 Staking Tool

- Used on CP/CS533C, CP/CS563C, and CS583C Compaction Equipment; 1055 and 2455 Asphalt Paver
- Spanner wrench is designed to fit down inside deep housing bore (locknut is over 90 mm (3.5 in) down inside housing)
- Designed to extend out beyond face of housing (round shank of spanner wrench extends beyond housing face and through alignment bracket)
- 126-6610 Alignment Bracket bolts directly onto housing and provides a reaction point for torque wrench (permits one-person tightening of locknut)
- Bracket uses existing final drive holes and bolts for mounting
- 129-2343 Staking Tool provides best method of properly securing locknut onto shaft (simple and easy to use; see illustration)
- Staking tool locates point of punch in the correct position to peen or stake locknut onto shaft (a regular punch could slip off of locknut and cause bearing damage)

Reference

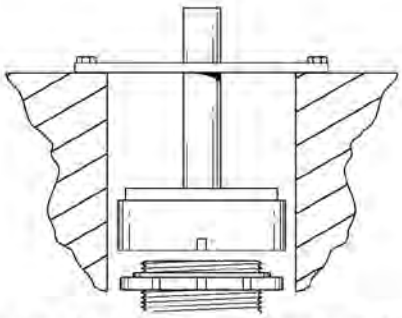
Service Manual, Disassembly and Assembly Module
KENR2888, AP1050B and AP1055B Asphalt Paver Machine Systems
Dissassembly and Assembly Module

Working torque capacity of spanner wrenches	950 N·m (700 ft-lb)
Square drive	3/4 in

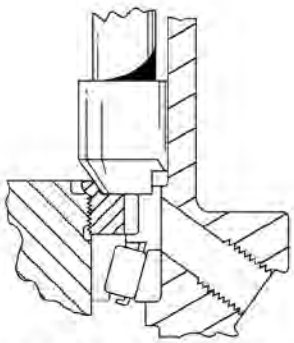


Part Number	Description	Width Of Square Teeth	Distance Between Teeth
126-6608	Locknut Spanner Wrench	14.3 mm (0.56 in)	214 mm (8.43 in)
126-6609	Locknut Spanner Wrench	14.3 mm (0.56 in)	232 mm (9.13 in)

Installing and Locking Locknut



Using the 126-6609 Locknut Spanner Wrench and 126-6610 Alignment Bracker to Install Locknut



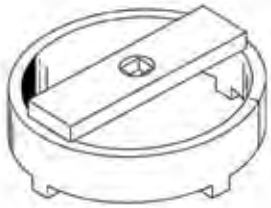
Using the 129-2343 Staking Tool to lock the locknut in place

156-5875 Travel Drive Nut Spanner Wrench
Essential Tool

SMCS Code: 4050-017
Model: 315B Excavator (HE Version Only)
Warranty: Six Months

- Used to remove and install 136-2824 Nut
- Makes repair of travel drive easier and quicker
- Pilots on inside diameter of ring gear, providing positive engagement

Reference
RENR1131, Service Manual Module, 315B and 315BL Excavators Machine Systems Disassembly and Assembly



Outside diameter	308.0 mm (12.13 in)
Inside diameter	278.0 mm (10.94 in)
Height	115.4 mm (4.54 in)
Tooth width	27.8 mm (1.09 in)
Number of teeth	4, equally spaced
Square drive	1 in

Part Number	Description
156-5875	Travel Drive Nut Spanner Wrench

6V-0082 Final Drive Bearing Adjustment Tool Arrangement
5P-8633 Trunnion Assembly

SMCS Code: 4050-025, 4050-017
Model: See Below

- Needed to apply torque required to preload final drive bearings on the 8 models of track-type machines listed in chart
- 5P-8633 Trunnion Assembly also required on 977 Track Loader; adjustment can be made without removing tracks

Reference
SMHS7583, Special Instruction

(Continued)

6V-0082 Final Drive Bearing Adjustment Tool Arrangement (Continued)
5P-8633 Trunnion Assembly

SMCS Code: 4050-025, 4050-017
Model: See Below

Service Tools for Final Drive Bearing Adjustment						
Item	Description	D4 941 951	D5 561	D6	D7 571 572 983	977
1	Driver Group (Part of 6V-0082)	1	1	1	1	1
2	Trunnion Group (Part of 6V-0082)[1]	1	1	1	1	1
[1]To adjust final drive bearings on 977K, 46H1-up and 977L, 11K1-11K-7712, the 5P-8630 Head must be modified in accordance with the Oct. 20, 1980 Service Magazine						

Item	Part No.	Description	D4 941 951[1]	D5 561	D6	D7 571 572 983	977
3	5P-8634	Spacer (Part of 6V-0082)	3	3	3	--	--
4	5P-8633	Trunnion Assembly	--	--	--	--	1
--	6V-0082	Tool Arrangement	--	--	--	--	--
Item (4) Includes:							
--	4B-5273	Washer	--	3	3	3	4
--	1A-5822	Bolt (1/2 - 13, 2.75 in long)	--	--	--	3	--
--	1D-4569	Bolt (1/2 - 13, 4.25 in long)	--	--	--	--	4
--	2B-2006	Bolt (1/2 - 13, 4.75 in long)	3	3	--	--	--
--	1B-2886	Bolt (1/2 - 13, 3.75 in long)	--	--	3	--	--
--	0S-1585	Bolt (1/2 - 13, 1.50 in long)	3	--	--	--	--

[1] Except D4 with Serial Nos. 4G and 7J

6V-0082 Final Drive Bearing Adjustment Tool Arrangement

Item	Description
Not Shown	SEHS7424 Decal

Item	Part Number	Description
Service/Repair Parts for 6V-0082 Tool Arrangement		
1	5P-8632	Trunnion Assembly
2	5P-8634	Spacer (3)
3	2B-0947	Bolt (3)
4	5P-8635	Pin
5	0S-1585	Bolt (2)
6	5P-8631	Driver Assembly
7	5H-7370	Seal
8	5P-8630	Head

6V-0082 Final Drive Bearing Adjustment Tool Arrangement

Sprocket Wear Gauges

SMCS Code: 4072-040
Model: D4, D5, D6, D7, D8 and D9 Tractors
Warranty: Six Months

- Used to determine when sprockets should be replaced on track-type tractors
- 5P-8616 Gauge used for D4, D5 and D6 Tractors
- 5P-8617 Gauge used for D7, D8 and D9 Tractors
- When point marked with model and pitch touches bottom of sprocket profile, sprocket should be replaced

5P-8617

5P-8616

Part Number	Description
5P-8617	Sprocket Wear Gauges
5P-8616	Sprocket Wear Gauges

8T-5243 Adapter Group

SMCS Code: 4200-011
Model: 215 Excavator
Warranty: Six Months

- Used to remove 1-piece sprocket wheel; sprocket wheel arrangement for 215 Excavator has changed from 2-piece design to single piece
- On earlier excavators, sprocket is bolted to splined hub; removal of sprocket done by removing bolts that hold it to hub; removal of 1-piece sprocket wheel must be done with hydraulic puller
- Provides necessary link between 1-piece 215 Excavator sprocket wheel and standard dealer service tools for hydraulic removal of wheel
- Removing sprocket wheel from most Cat® track-type machines involves tooling that connects a hydraulic cylinder to sprocket wheel; special adapters are used to connect sprocket wheel to rest of tooling; those adapters are installed from inboard side of sprocket wheel; because of limited clearance between sprocket wheel and final drive case on 215 Excavator, it is not possible to install adapters from inboard side; 8T-5243 Adapter Group can be installed from outboard side of sprocket wheel (3 required)

Item	Description
1	Plate
2	Adapter

Item	Part Number	Description	Qty
3	0S-1615	Bolt[1]	2
4	5P-4115	Washer[1]	2

(Continued)

8T-5243 Adapter Group (Continued)

SMCS Code: 4200-011
Model: 215 Excavator
Warranty: Six Months

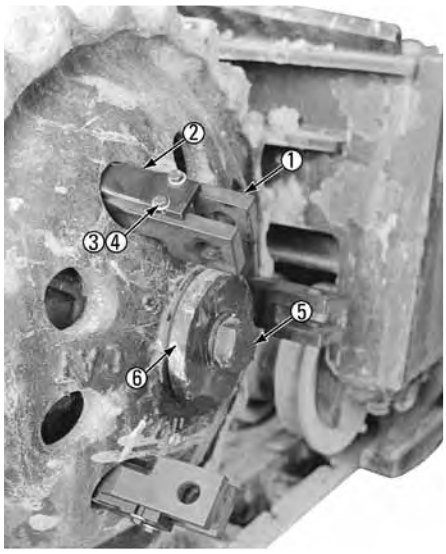
[1] Parts serviced separately.

Sprocket Wheel Removal Tools

Complete Set of Tooling Required to Remove Sprocket Wheel	
Not Shown	Hydraulic Service Pump

Item	Part Number	Description	Quantity
Complete Set of Tooling Required to Remove Sprocket Wheel			
1	8T-5243	Adapter Group	3
2	7B-2499	Ring	12
3	6H-4158	Pin	6
4	5F-9306	Arm	3
5	8S-9975	Ram Adapter	1
6	9S-8900	Cylinder Group	1

Adapter Group Installation



Install the adapter groups by evenly spacing them in the holes in the sprocket flange. The “hooked” adapter (1) is installed first and then the plate (2). The plate is fastened to the adapter with two bolts (3) and washers (4). It serves as a spacer to retain the adapter in the sprocket wheel.
Before installing the remainder of the tooling, loosen bolt (5) so that there is approximately a 6.35 mm (0.25 in) gap between the retainer (6) and the sprocket wheel.
The hydraulic cylinder and the remainder of the tooling are installed in the conventional manner.

Hydraulic Cylinder Installation

The hydraulic cylinder and the remainder of the tooling are installed in the conventional manner.

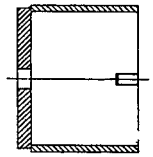
4C-8757 Drive Axle Nut Spanner Wrench

SMCS Code: 4084-010
416, 426, 428, 436, 438, 446 Backhoe Loaders
Warranty: Six Months

- Used to remove and install 9R-6957 Nut to quickly and easily disassemble and assemble drive axle assembly
- Used to remove and install 9R-3164 Nut in the ZF axle assembly
- 3/4 inch drive

Reference

SENR3970, Service Manual



Part Number	Description
4C-8757	Drive Axle Nut Spanner Wrench

FT1936 Wrench

SMCS Code: 3200-036
Model: 943, 953, 963, 973 Loaders
Warranty: None

- Used to adjust transmission
- Fits square head adjustment screw for overspeed valve in hydrostatic transmissions
- Makes it easier to set the valve
- Valve can be adjusted while mechanics hands are positioned outside transmission
- Can also be used on any square head 6.4 mm (0.25 in) bolt

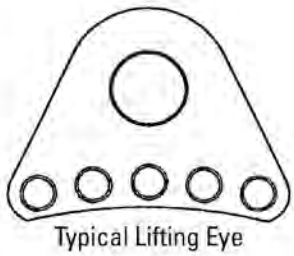
Lifting Eyes

SMCS Code: 4050-010
Model: 785 and 789 Off-Highway Trucks
Warranty: Six Months

- Used to remove and install final drives
- Safe, secure, convenient brackets quickly attached to final drive wheel studs after tires and rims removed
- Allow use of chains or cables with hooks instead of 2 large, long straps which are not always available

References

When revisions (-01) are available:
SENR4010, Service Manual, 785 Power Train Disassembly and Assembly
SENR3430, Service Manual, 789 Power Train Disassembly and Assembly


Typical Lifting Eye

1U-9365 fits	inner wheel stud pattern
1U-9378 fits	outer wheel stud pattern
Lifting capacity	6810 kg (15,000 lb)
Thickness of plate	25.4 mm (1.0 in)
Estimated weight	6 kg (13.2 lb)

Metric Lifting Eyes

SMCS Code: 4050-0104
Model Usage: All Cat® Products
Warranty: Manufacturer's

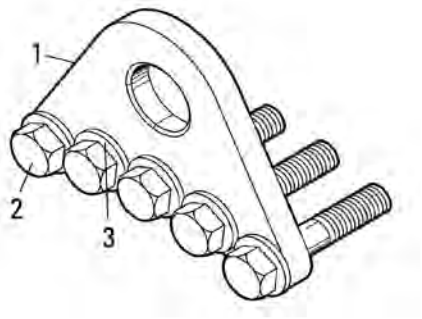
European Union compliant, CE marked

- Suitable for loads which swivel and tilt
- Can be load in all directions with a 4:1 design factor
- Swiveling under full load is permissible provided the inclination angle is not perpendicular to the screw-in direction.
- Not for permanent swiveling under full load

Part No.	Thread	Working Load Limit	Weight
384-9657	M10	450 kg (990 lb)	0.3 kg (.66 lb)
384-9658	M12	600 kg (1320 lb)	0.5 kg (1.1 lb)
384-9659	M14	1000 kg (2200 lb)	0.6 kg (1.3 lb)
384-9660	M16	1300 kg (2860 lb)	0.6 kg (1.3 lb)
384-9661	M20	2000 kg (4400 lb)	1.4 kg (3.1 lb)
384-9662	M24	3500 kg (7700 lb	2.7 kg (6.0 lb)
384-9663	M30	5000 kg (11000 lb)	5.5 kg (12.1 lb)
384-9664	M36	8000 kg (17600 lb)	4.8 kg (10.6 lb)
384-9665	M48	10000 kg (22000 lb)	6.2 kg (13.6 lb)
384-9666	M64	15000 kg (33000 lb)	9.9 kg (21.8 lb)

179-8695 Lifting Plate
Essential Tool

SMCS Code: 3278-010
Model: 994 and 994D Wheel Loader
Warranty: Six Months



European Union compliant, CE marked

- Used to safely remove and install final drive and axle housing assemblies
- Removal procedure requires 2 lifting plates
- Easily attaches to axle housing with provided hardware

Reference

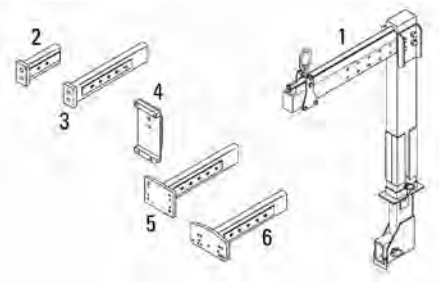
RENR2034, 994 Wheel Loader Power Train Disassembly and Assembly

Maximum capacity	8619 kg (19,000 lb)
Weight	11.5 kg (25 lb)

Item	Part Number	Description
1	179-8695	Lifting Plate
2	8T-0370	Hex Head Bolt
3	3S-7023	Washer-Hard

Multi-Purpose Lifting Bracket and Adapters

SMCS Code: 3258-010, 3002-010, 3030-010, 4050-010, 4050-017, 4084-010, 4100-010, 4205-010, 4208-010, 6605-022
Model: 14H, 16H Motor Grader; CB434D, CS434D Compactor; 785, 789, 793, and 797 Off-Highway Truck; and 994 Wheel Loader
Warranty: Six Months



European Union compliant, CE marked

- Used to remove and install various final drive components
- Used with suitable hoist or lifting device
- Top rail of lifting bracket bolts to vertical tube in various locations
- Threaded rod allows center of gravity to be changed under load
- Vertical tube adjusts to different lengths
- Bottom rail accepts several different tube assemblies and adapters
- Various adjustments allow for maximum versatility

References

RENR4178, Power Train for 14H Motor Grader, Differential Remove and Install
RENR4196, Power Train for 16H Motor Grader, Differential Remove and Install

Item	Part Number	Description
2	226-2380	Multi-Purpose "C" Style Lifting Bracket Assembly
3	226-2381	Short Slide Tube Assembly (included with 226-2380 Lifting Bracket Assembly)
3	226-2382	Long Slide Tube Assembly (included with 226-2380 Lifting Bracket Assembly)
4	226-2383	Adapter Plate Assembly used with 226-2380 Bracket Assembly to remove and install 14H and 16H Motor Grader Differential
5	233-1485	Tube Plate Assembly used with 226-2380 Bracket Assembly to remove and install CP434D and CS434D Compactor Differential
6	226-2379	Tube Plate Adapter Assembly used with 226-2380 Bracket Assembly and 128-4776, 128-4773, 152-7247, 9U-6122, 153-1174, or 153-1175 Handling Bracket Assemblies used on 785, 789, 793, 797 Off-Highway Truck and 994 Wheel Loader

⚠ WARNING

Working load limit of 1814 kg (4000 lb). Injury to personnel and damage to equipment can result if the load limit is exceeded.

128-4775 Lifting Bracket Assembly

SMCS Code: 4050-011, 4050-012, 4050-017, 4084-010, 4205-010, 4208-011
Model: 785, 789, and 793 Trucks
Warranty: Six Months

European Union compliant, CE marked

- Used to easily balance various final drive components during disassembly and assembly by positioning lifting eye over center of gravity (adapter/extension assemblies allow bracket to be used on many different components)
- Used with 128-4773 Bracket Extension Assembly to remove and install differential group, holding it in a horizontal position — lift capacity is 2041 kg (4500 lb); differential group weighs approximately 1134 kg (2500 lb)
- Used with 128-4776 Bracket Extension Assembly to remove and install various components, such as ring gear assembly and small planetary assembly
- Large planetary assembly can be removed and installed, using lifting bracket assembly, without extension assembly
- Uses an adjustable lifting eye for balancing loads of different components
- Relative lifting capacities are marked at various locations on side of lifting bracket over entire 424 mm (16.7 in) adjustment range for fast and accurate centering of bracket on each particular component being lifted

Adjustment range	424 mm (16.7 in)
Lifting capacity	1134 kg (2500 lb) with lifting eye in extended position
Max lifting capacity	2041 kg (4500 lb) with lifting eye in retracted position

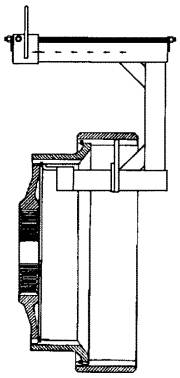
(Continued)

128-4775 Lifting Bracket Assembly (Continued)

SMCS Code: 4050-011, 4050-012, 4050-017, 4084-010, 4205-010, 4208-011
Model: 785, 789, and 793 Trucks
Warranty: Six Months

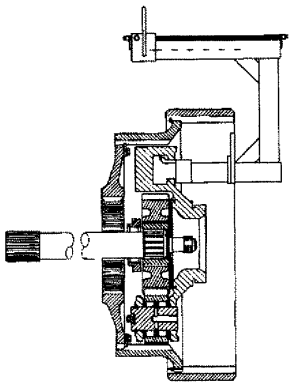
Part Number	Description
128-4773	Bracket Extension Assembly
128-4775	Lifting Bracket Assembly
128-4776	Bracket Extension Assembly

128-4775 Lifting Bracket Assembly



128-4775 Lifting Bracket Assembly and 128-4776 Bracket Extension Assembly Shown Lifting Ring Gear Assembly on Truck's Axle Housing Hub
The end plate of extension assembly is positioned in ring gear's retaining groove. Positive support and retention of gear is achieved with this tooling.

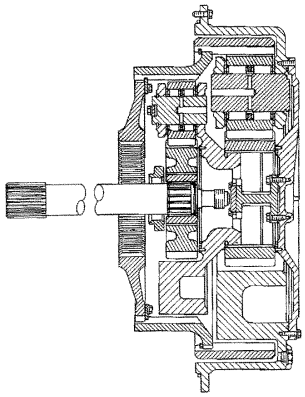
128-4775 Lifting Bracket Assembly



128-4775 Lifting Bracket Assembly and 128-4776 Bracket Extension Assembly Shown Lifting Small Planetary Assembly
The extension assembly is hooked into the casting cavity of small planetary assembly allowing it to be installed into ring gear assembly.

128-4775 Lifting Bracket Assembly

128-4775 Lifting Bracket Assembly Shown Lifting Large Planetary Assembly (no extensions are required)
The large planetary assembly can be installed next to small planetary and inside ring gear assembly.
Bracket is mounted to assembly using studs on housing assembly.



128-4776 Bracket Extension Assembly

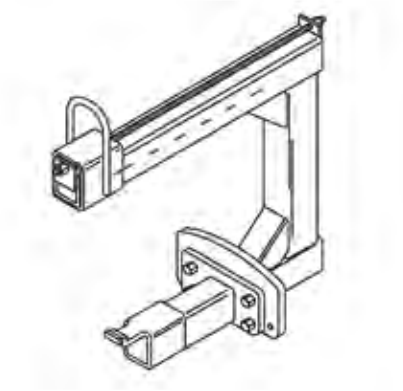
SMCS Code: 4050-011, 4050-012, 4050-017, 4084-010
Model: 785, 789, and 793 Trucks
Warranty: Six Months

European Union compliant, CE marked

- Used to disassemble and assemble various components, such as ring gear assemblies and small planetary assemblies
- Used with 128-4775 Lifting Bracket Assembly
- Eye of lifting bracket assembly can be easily adjusted to balance the loads center of gravity
- For small planetary assemblies, hook extension into casting cavity to install planetary into ring gear assembly
- For ring gear assembly on truck axle housing hub, position extension in ring gear retaining groove; provides positive support and retention of gear

Maximum lifting capacity	386 kg (850 lb)

Part Number	Description
128-4776	Bracket Extension Assembly



128-4773 Bracket Extension Assembly

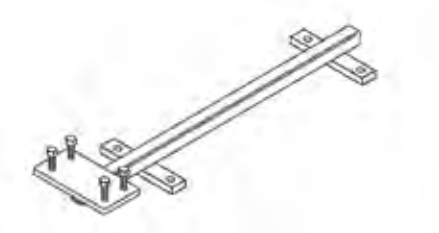
SMCS Code: 3258-011, 3258-012, 4084-010
Model: 785, 789, and 793 Trucks
Warranty: Six Months

European Union compliant, CE marked

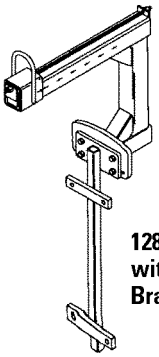
- Used to remove and install differential group; holds the group in a horizontal position, making overhauls faster and simpler, with reduced possibility of component damage
- Used with 128-4775 Lifting Bracket Assembly
- Lifting bracket can be easily adjusted to balance the loads center of gravity
- Attaches to mounting studs which secure transmission to differential arrangement
- Designed to clear rear brake slack adjuster and brake lines, when used with the 128-4775 Lifting Bracket Assembly

Maximum lifting capacity	1145 kg (2525 lb)

Part Number	Description
128-4773	Bracket Extension Assembly



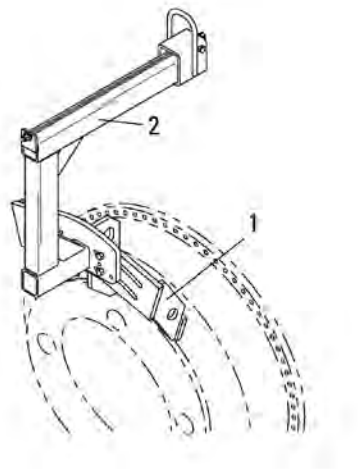
128-4773 Bracket Extension Assembly



128-4773 used with 128-4775 Lifting Bracket Assembly

Lifting Adapter Assemblies

SMCS Code: 4050-010, 4208-010, 7561-010
Model: 785, 789, 793, 797 Off-Highway Trucks; 994 Wheel Loader
Warranty: Six Months



European Union compliant, CE marked (152-7247)

- 152-7247 Outer Carrier Adapter Assembly replaces discontinued 9U-6121 Adapter Assembly (9U-6121 works only on 785, 789 and 793; it can still be used)
- Safe, efficient tools used to remove and install final drive planetary carriers -- a difficult job without these tools
- Used with 128-4775 Lifting Bracket Assembly (except 797 outer carrier)
- Allow center of gravity to be adjusted which facilitates alignment during installation
- 152-7247 attached to outer planetary carriers on 785, 789, 793, 797 and 994 (slotted bolt holes in adapter allows it to be mounted on carrier regardless of orientation of bolt holes in carrier)
- 9U-6122 required to remove and install inner planetary carriers on 793 and 994
- 153-1174 required to remove and install inner planetary carrier on 797
- 153-1175 required to remove and install ring gear on 797
- Used with 160-1831 Bracket Assembly mounted on fork left when 128-4775 Lifting Bracket Assembly cannot be used

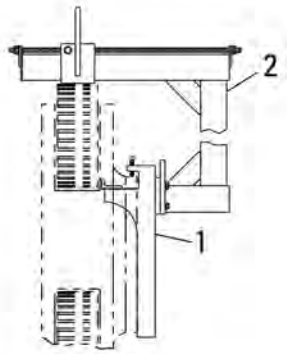
Reference

Power Train Disassembly and Assembly Service Manuals:
SENR4747, 994
SENR4907, 793
SENR4010, 785
SENR3420, 789

Item	Part Number	Description
1	152-7247	Handling Bracket Assembly
2	128-4775	Lifting Bracket Assembly

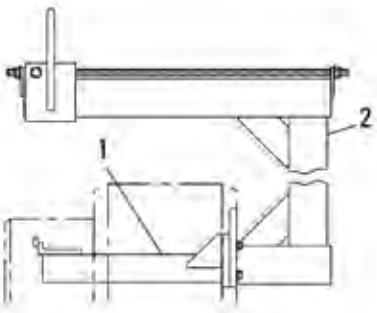
Lifting Adapter

Item	Part Number	Description
1	9U-6122	Lifting Adapter Assembly, Inner Carrier
2	128-4775	Lifting Bracket Assembly



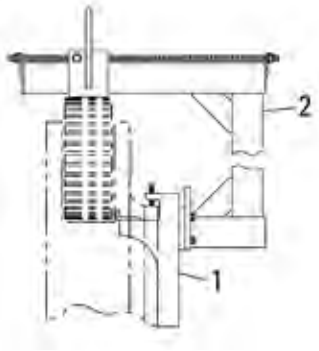
Lifting Adapter

Item	Part Number	Description
1	153-1175	Handling Bracket Assembly
2	128-4775	Lifting Bracket Assembly



Lifting Adapter

Item	Part Number	Description
1	153-1174	Handling Bracket Assembly
2	128-4775	Lifting Bracket Assembly

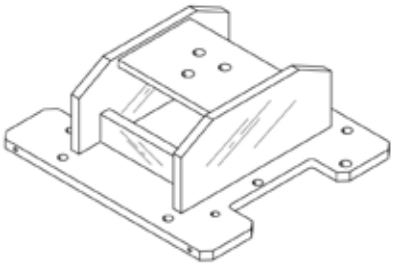


FT2759 Adapter Plate

SMCS Code: 3258
Model: MT735, MT745, MT755, MT765, MT835, MT845, MT855, and MT865 Challenger Gen III Ag Tractors
Warranty: None

- Used to mount differential assembly to 1U-5750 Engine Stand
- Strong, heavy-duty design will provide years of serviceable life
- Provides good repair and overhaul access in all positions

NOTE
Final drive assemblies must be removed before mounting differential to adapter plate due to excess weight



144-3488 Brake Hub Lifting Device

SMCS Code: 4132-010
Model: 789 and 793C Off-Highway Trucks
Warranty: Six Months

European Union compliant, CE marked

- Used to provide a safe method for removing and installing brake hub while rear wheel spindle is in horizontal or vertical orientation
- Used with hoist or other suitable lifting device

References

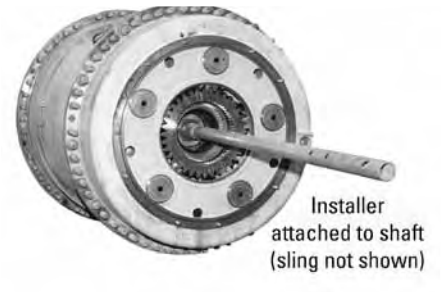
SENR5692, 793B Truck Machine Systems
SENR5687, 789B Truck Machine Systems

Working load limit	82 kg (180 lb)

Part Number	Description
144-3488	Brake Hub Lifting Device

1U-8848 Installer

SMCS Code: 4056-010, 3259-010
Model: 789 Off-Highway Truck
Warranty: Six Months

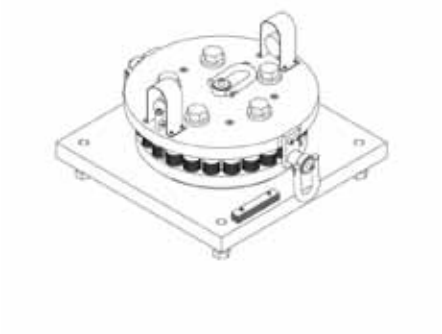


- Essential for safe, proper removal and installation of 8W-8739 and 8W-8741 Final Drive Shafts (larger 8W-8739 and 8W-8741 Shafts replace 5T-6393 and 5T-6394 Final Drive Shafts)
- 8W-8739 and 8W-8741 Shafts weigh 137 kg (301 lb) and have 2 1/2 inch-12 threaded connection compared to 5T-6393 and 5T-6394 Final Drive Shafts weighing 114 kg (251 lb) with 2 inch-12 threaded connection
- Therefore, 5P-7395 Installer used on 5T-6393 and 5T-6394 Final Drive Shafts will not work on 8W-8739 and 8W-8741 Final Drive Shafts
- Hoist and sling support tool and shaft during installation and removal of axle

Part Number	Description
1U-8848	Installer

Front Wheel Bearing Preload Adjusters Essential Tool

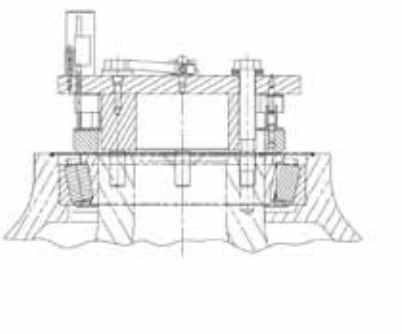
SMCS Code: 4056-025
Model: 777, 785, 789, 793, and 797 Off-Highway Trucks
Warranty: Six Months



- Made as ordered (MAO)
- Used to accurately adjust the amount of shims required for proper preload setting
- No calculations are required
- Improved accuracy over conventional methods
- Reduced adjustment time over conventional methods
- Less chance of error than with conventional methods
- Rugged design ensures long life and maintains calibration
- Includes a precision zero plate to assure high accuracy
- Indicators and all attachment hardware are included
- Lifting rings are provided to position preload adjuster with lifting device
- Front wheel assembly may be in a spindle-down, vertical, or horizontal position when using this tool
- Requires annual calibration

Front Wheel Assembly

Part Number	Description	Model	Tool Operating Manual
200-4529	Preload Adjuster	777	NEHS0917
200-4532	Preload Adjuster	785, 789, and 793	NEHS0920
200-4533	Preload Adjuster	797	NEHS0873
Service/Repair Parts			
266-0307	Bolt	777	--
266-0308	Bolt	785 and 789	--
266-0309	Bolt	793	--
266-0310	Bolt	797	--
266-0379	Indicator	All models	--

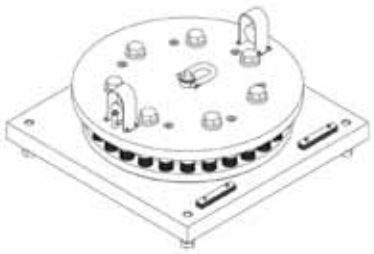


Rear Wheel Bearing Preload Adjusters

Essential Tool

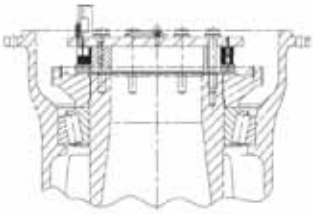
SMCS Code: 4056-025
Model: 776, 777, 784, 785, 789, 793, and 797 Off-Highway Trucks
Warranty: Six Months

- Used to accurately adjust the amount of shims required for proper preload setting
- No calculations are required
- Improved accuracy over conventional methods
- Reduced adjustment time over conventional methods
- Less chance of error than with conventional methods
- Rugged design ensures long life and maintains calibration
- Includes a zero plate to assure high accuracy
- Indicators and all attachment hardware are included
- Three lifting rings are provided to position preload adjuster with lifting device
- Rear wheel assembly must be in spindle-down, vertical position to use this tool



Rear Wheel Assembly

Part Number	Description	Model	Tool Operating Manual
193-4121	Preload Adjuster	777	NEHS0910
193-4122	Preload Adjuster	785	NEHS0921
193-4123	Preload Adjuster	789	NEHS0922
193-4124	Preload Adjuster	793	NEHS0911
193-4125	Preload Adjuster	797	NEHS0872
Service/Repair Parts			
266-0311	Bolt	777 - 777D [1]	--
266-0312	Bolt	785	--
266-0313	Bolt	789	--
266-0314	Bolt	793	--
266-0315	Bolt	797	--
266-0379	Indicator	All models	--
8T-6383	Bolt	777F, 777G [2]	--



[1] 266-0311 Bolts must be used to zero in the indicators on the master plate
[2] For 777F Rear Spindles only

266-0379 Basic Electronic Indicator

SMCS Code: 4028-025
Model: 776, 777, 784, 785, 789, 793, and 797 Off-Highway Trucks
Warranty: Manufacturer's

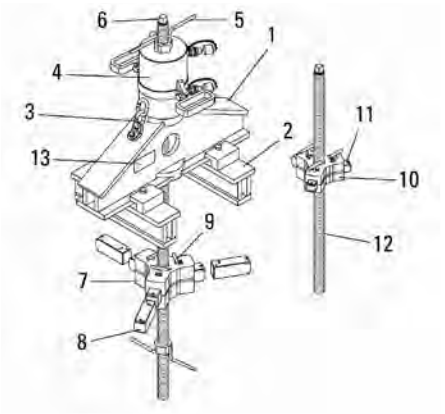
- Conform to the dimensions of AGD size Group 2
- 0.375" (9.5mm) stem
- Utilizes standard indicator accessories and holding devices
- Battery powered and portable
- Large LCD readout, surrounded by a rotating black bezel
- Lug-on-center back
- Instant inch/mm conversion
- Zero at any position
- Plus/minus control to indicate direction
- ON/OFF control with automatic off after one hour of nonuse (Zero references will not be lost from memory)

Specifications	
Range	25 mm (1.0 in)
Resolution	0.01mm (0.0005 in)
Weight	0.145 kg (0.32 lb.)

Part Number	Description
266-0379	Basic Electronic Indicator

301-5718 Wheel Bearing Removal Group

SMCS Code: 4215
Model: 769D, 770, 771D, 772, 773E, 775E, 773F, 775F, 777D, and 777F Off-Highway Trucks
Warranty: Six Months



- Used to remove large bearing cup from off-highway truck wheel hubs
- Used with suitable overhead lifting device and additional required tooling
- Removes inboard and outboard bearing cups on specific front and rear wheel assemblies
- Tool usage charts in NEHS1000 Tool Operating Manual and SEBF9118 Special Instruction list components and settings needed for bearing cup removal
- Heavy-duty construction with heat-treated components
- Weight: 163 Kg (359 lbs)

Reference

NEHS1000, Tool Operating Manual, Procedure to Remove Wheel Bearings from Off-Highway Trucks
SEBF9118, Special Instruction, Procedure to Remove Large Wheel Bearings

Item	Part Number	Description
2		Crossbar Slider Assembly (not serviced separately)
9	CL-38-TP[1]	T-handle (3)
[1] Carr Lane Mfg part number(www.carrlane.com)		

Item	Part Number	Description
--	301-5718	Wheel Bearing Removal Group
1.0	301-5719	Crossbar
3.0	138-7573	Bracket Assembly - Link
3.0	4L-9337	Bolt (2)
3.0	8T-4896	Washer (2)
4.0	316-1489	Cylinder Group (60 Ton)

(Continued)

301-5718 Wheel Bearing Removal Group (Continued)

SMCS Code: 4215
Model: 769D, 770, 771D, 772, 773E, 775E, 773F, 775F, 777D, and 777F Off-Highway Trucks
Warranty: Six Months

Item	Part Number	Description
5.0	9U-6809	Nut - Fast Runner, (M36 x 4)
6.0	9U-6811	Puller Stud
7.0	301-5722	Hub Assembly (large)
8.0	301-5723	Slide Bar Set, 87.0 mm (3.42 in) long (serviced only as a set)
8.0	301-5724	Slide Bar Set, 132.0 mm (5.20 in) long (serviced only as a set)
10.0	301-5720	Hub Assembly (small)
11.0	301-5721	Slide Bar Set, 69.6 mm (2.75 in) long (serviced only as a set)
12.0	9U-7998	Puller Stud, M36 x 920 mm (36.22 in) long
13.0	224-0554	Warning Film

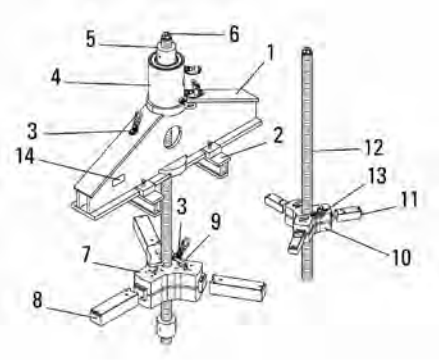
301-5718 Additional Required Tooling for Wheel Bearing Removal Group

Part Number	Description	Qty
	Additional Required Tooling	
1P-2376	Coupler Assembly Quick Connective (Female) (2)	2
3S-6224	Pump Group - Hydraulic (115V)	1
6D-7726	Hydraulic Hose	2
6V-3145	Load Leveler (Optional)	1
8T-5343	Pressure Gauge	1

301-5725 Wheel Bearing Removal Group

SMCS Code: 4215
Model: 777D, 777F, 785, 789, 793 std, 793XLP, and 797 Off-Highway Trucks
Warranty: Six Months

- Used to remove large bearing cup from off-highway truck wheel hubs
- Used with suitable overhead lifting device and additional required tooling
- Removes inboard and outboard bearing cups on specific front and rear wheel assemblies
- Tool usage charts in NEHS1000 Tool Operating Manual and SEBF9118 Special Instruction list components and settings needed for bearing cup removal
- Heavy-duty construction with heat-treated components
- Weight: 729 Kg (1607 lbs)



Reference

NEHS1000, Tool Operating Manual, Procedure to Remove Wheel Bearings from Off-Highway Trucks
SEBF9118, Special Instruction, Procedure to Remove Large Wheel Bearings

(Continued)

301-5725 Wheel Bearing Removal Group (Continued)

SMCS Code: 4215
Model: 777D, 777F, 785, 789, 793 std, 793XLP, and 797 Off-Highway Trucks
Warranty: Six Months

Item	Part Number	Description
4		Hydraulic Cylinder
7		Hub Assembly (Large)
9	CL-13-TP[1]	T-Pin - Fits 301-5727 Hub Assembly (3)
	CL-40-TP[1]	T-Pin - Fits 301-5730 Hub Assembly (3)
10		Hub Assembly (Small)
[1] Carr Lane Mfg part number (www.carrlane.com)		

Item	Part Number	Description
1	301-5726	Crossbar
3	138-7575	Bracket - Link (3)
3	5P-2566	Hex Head Bolt
3	8T-4223	Hard Washer[1]
5	9U-6800	Speed Nut, M64 (2)
6	9U-6702	Puller Stud (M64/2451 long)
8	301-5728	Slide Bar Set, 190.0 mm (7.48 in) long (serviced only as a set)
8	301-5729	Slide Bar Set, 330.0 mm (13.0 in) long (serviced only as a set)
11	301-5731	Slide Bar Set, 120.0 mm (4.72 in) long (serviced only as a set)
11	301-5732	Slide Bar Set, 155.0 mm (6.10 in) long (serviced only as a set)
12	4C-8150	Rod As - thd
13	5P-1075	Hard Washer
13	138-7573	Bracket Assembly - Link
13	5M-3062	Bolt
14	224-0554	Warning Film
--	301-5725	Wheel Bearing Removal Group

[1] 2 required

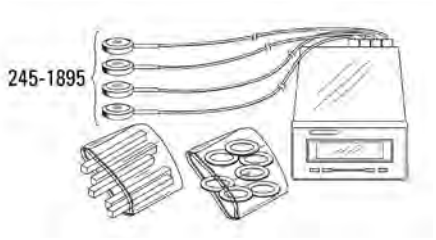
301-5725 Additional Tooling for Wheel Bearing Removal Group

Part Number	Description	Qty
	Additional Required Tooling	
1P-2376	Coupler Assembly Quick Connective (Female) (2)	2
3S-6224	Pump Group - Hydraulic (115V)	1
6D-7726	Hydraulic Hose	2
6V-3145	Load Leveler (Optional)	1
8T-5343	Pressure Gauge	1

245-1893 Calibration Group, 245-1895 Load Cell Sensor

Essential Tool

SMCS Code: 4056-524
Model: 777 through 797 Off-Highway Trucks
Warranty: One Year



European Union compliant, CE marked

- Used to annually check all 10 bearing preload adjusters
- Used with McMaster-Carr 98870A2651 Steel Machine Key and 3088A4571 Steel Shim
- 4 load cell sensors, 10 steel machine keys, and 10 steel shims are packaged with calibration group
- Portable, easy to use
- All parts fit into a 4C-9656 Pelican Case for safe storage

Reference

NEHS0905, 245-1893 Calibration Group Used to Calibrate the Bearing Preload Adjusters for Off-Highway Trucks

Service part	245-1895 Load Cell Sensor
Inputs	(4X) strain gauge input card for unamplified load cells
Outputs	Field selectable voltage (5, ±5, 10, ±10 V DC)
	RS-232
	Summing Function
Display	16 character, dual line, vacuum fluorescent split screen displays
Power	100 - 230 VAC
	miniature load cell with signature calibration module
Range	4535 kg (10,000 lb) per sensor
Cable length	2 m (6.5 ft)

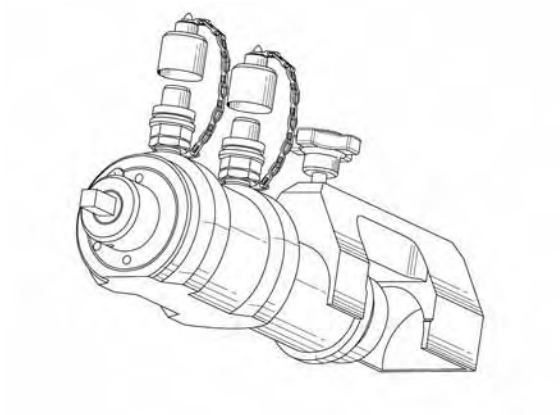
Part Number	Description
245-1895	Load Cell Sensor
245-1893	Calibration Group

Models for 245-1893 Calibration Group

Used to Calibrate Front and Rear Wheel Bearing Preload Adjusters		
Model	Front	Rear
777	200-4529	193-4121
785	200-4532	193-4122
789	200-4532	193-4123
793	200-4532	193-4124
797	200-4533	193-4125

197-5589 Wheel Stud Tool Group
223-2405 Stud Cylinder Group (Not Serviced)

SMCS Code: 4210 -010
Model: 797 and 797B Off-Highway Trucks
Warranty: Six Months



- Used to remove and install M36 Studs from both front and rear wheel assemblies
- Used with either 3S-6224 (115V) or 8S-8033 (230V) Electric Hydraulic Pumps to supply hydraulic pressure
- Can be used for in-chassis or out-of-chassis procedures after tire and rim have been removed
- Eliminates use of sledge hammer that could damage existing studs and cause wheel flange fractures
- Designed with a lightweight, double acting cylinder
- Removes broken studs or removes and reuses studs during salvage operations

Reference

NEHS0858, Tool Operating Manual, Using the 197-5589 Wheel Stud
Remover/Installer

NOTICE

The 3S-6224 (115V) or 8S-8033 (230V) Electric Hydraulic Pumps have a maximum operating pressure of 68,948 kPa (10,000 PSI). The 197-5589 Wheel Stud Remover/Installer, however, has a maximum working pressure of 44,816 kPa (6,500 PSI); therefore, the pump MUST BE regulated to not exceed 44,816 kPa (6,500 PSI). Failure to regulate the pump will result in seal failure and component damage.

Stud thread size	M36 x 4
Maximum operating pressure	448 bar (6500 PSI)
Maximum initial load	312168 kN (31330 ft-lb / 15.6 tons)
Maximum stroke	55.0 mm (2.17 in)
Minimum thread engagement	36.0 mm (1.42 in)
Cylinder weight	10.4 kg (23 lb)
C-clamp weight	3.7 kg (8 lb)

Part Number	Description	Qty.
197-5589	Wheel Stud Tool Group	--
Additional Parts (Sold Separately)		
3S-6224	Hydraulic Pump Group	--
8S-8033	Hydraulic Pump (230 V)	--
8T-0820	Gauge - Pressure	--
8T-5343	Gauge - Pressure Stem Mount	--
135-2532	Fitting - Adapter	2
135-2533	Fitting - Adapter	--
1P-2376	Coupler Assembly Quick Connective (Female)	2
1P-2377	Plug As - Dust	2

Part Number	Description	Qty.
Additional Parts (Sold Separately) (Continued)		
8F-0024	Hose Assembly	2
6D-7726	Hose Assembly	2
Service/Repair Parts		
1P-2375	Coupler Assembly Quick Connective (Male)	--
1P-7437	Protective Cap	--
223-2406	Seal Kit	--
223-2407	Puller Bar Group	--
223-2408	Stud Removal Plug Assembly	--
223-2409	C- clamp Group	--

1U-5771 Adapter

SMCS Code: 4058-010, 4164-010
Model: D6C and D6D Track-Type Tractors
Warranty: Six Months

- Used to install final drive sprocket
- Replaces 5P-4183 Adapter in this application; 5P-4183 Adapter still used in other applications
- 5P-4183 Adapter mounted on sprocket shaft (dead axle) and allowed sprocket installation force to be received by inner tapered roller bearing; 1U-5771 Adapter mounts directly to bull gear hub and eliminates installation force from inner tapered roller bearings, reducing possibility of bearing damage during installation of sprockets

Part Number	Description
1U-5771	Adapter

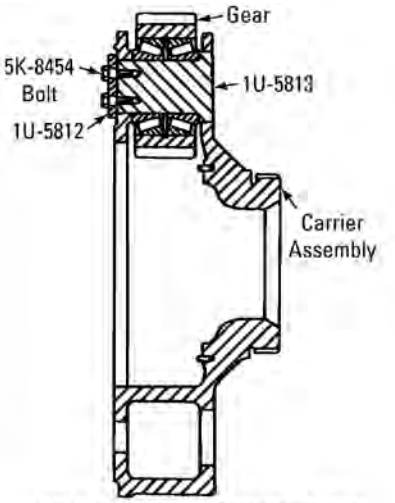
1U-5812 Plate
1U-5813 Shaft

SMCS Code: 3006-010, 4050-025, 4208-012
Model: 785, 789 and 793 Off Highway Trucks
Warranty: Six Months

- Used to preload bearings in final drive first reduction planetary
- Bearing adjustment procedure at first reduction planetary locations has been changed to improve bearing life in trucks operated consistently at speeds over 42 km/h (26 mph)
- Planetary bearings are shim adjusted using 1U-5812 and 1U-5813 prior to final assembly (requires two 5K-8454 Bolts); with bearings and bearing adjustment tools installed, proper shim thickness can be determined using micrometer; tooling then removed and 8X-8412 Shaft is pressed through carrier and bearings; proper shims are installed and secured with 8W-3088 Plate and two 5K-8454 Bolts

References

Revision of 785, 789 and 793 Off-Highway Truck Service Manual
SEBE3556-01, Service Letter for bearing adjustment procedures
SEPD0091, Service Magazine, November 11, 1991



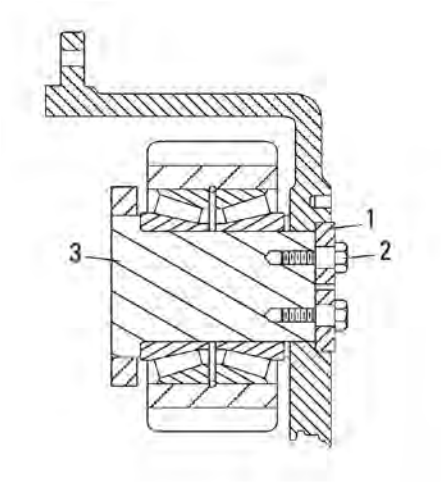
785/789/793 Off-Highway Truck Final Drive First Reduction Planetary Assembly

Part Number	Description
1U-5813	Shaft
1U-5812	Plate

1U-5812 Plate

4C-9923 Plate
4C-9924 Planet Shaft

SMCS Code: 4084-036
Model: 793 Truck
Warranty: Six Months



- Used to preload bearings in order to measure and determine shim pack (required for proper preload of bearings in final drive outer planet carrier)
- Used with two 6V-3303 Bolts and depth micrometer

Reference

SENR4907, Service Manual Module: Power Train, Disassembly and Assembly

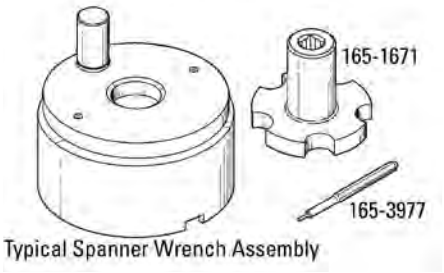
NOTE:

On page 12 of Power Train Disassembly and Assembly module (SENR4907), update Tool Chart by adding part numbers 4C-9924 (Shaft) and 4C-9923 (Plate) for tools under column "G". Also eliminate the word "Fabricate" from both lines.

Item	Part Number	Description	Size
793 Truck Final Drive (Outer Carrier)			
1	4C-9923	Plate	1.4 kg (3.0 lb)
2	6V-3303	Bolt	--
3	4C-9924	Planet Shaft	15.9 kg (35.0 lb)

Bearing Retainer Nut Tools for Excavators
Essential Tool

SMCS Code: 4050-017
Model: 315B, 317B, and 318B Excavator (Grenoble Version) 165-3977: 797, and 797B Off-highway Truck Differential
Warranty: Six Months



Typical Spanner Wrench Assembly

- Used to remove and install final drive bearing retainer nut (165-1670 or 199-4925 Spanner Wrenches and 165-1671 Reaction Shaft work together)
- Bearing retainer nut can be tightened without using final drive repair bench or other special holding fixture
- 165-3977 Radius Punch used to form a seat for retainer nut locking ball and screw

References

RENR1148, 315B Excavators Machine Systems Disassembly & Assembly
RENR2925, 317B Excavators Machine Systems Disassembly & Assembly
RENR3272, 318B Excavators Machine Systems Disassembly & Assembly

(Continued)

Bearing Retainer Nut Tools for Excavators (Continued)

Essential Tool

SMCS Code: 4050-017
Model: 315B, 317B, and 318B Excavator (Grenoble Version) 165-3977: 797, and 797B Off-highway Truck Differential
Warranty: Six Months

165-1670 Spanner Wrench Assembly	
Outside diameter	239.8 mm (9.44 in)
Inside diameter	203.2 mm (8.00 in)
Height	143.9 mm (5.67 in)
199-4925 Spanner Wrench Assembly	
Outside diameter	239.8 mm (9.44 in)
Inside diameter	203.2 mm (8.00 in)
Height	143.9 mm (5.67 in)
165-1671 Reaction Shaft	
Flange outside diameter	160.0 mm (6.30 in)
Shaft diameter	63.5 mm (2.50 in)
Flange thickness	25.4 mm (1.00 in)
Height	135.5 mm (5.33 in)
Square drive	1 in
165-3977 Radius Punch	
Tip diameter	4.95 mm (0.195 in)
Overall length	154.0 mm (6.06 in)
Hex handle	16.0 mm (0.630 in)

Part Number	Description	315B L	317B L	317B LN	318B	318B N
165-1670	Spanner Wrench Assembly	5SW00001 to 5SW00340	9WW00001 to 9WW00454	6DZ00001 to 6DZ00442	ADC00001 to ADC00255	AEJ00001 to AEJ00317
199-4925	Spanner Wrench Assembly	5SW00341 and UP	9WW00455 and UP	6DZ00443 and UP	ADC00256 and UP	AEJ00318 and UP

Service Tools for Excavators

Essential Tool

SMCS Code: 4050-017, 4351-017
Model: 312 and 312B Excavators (Grenoble Version)
Warranty: Six Months

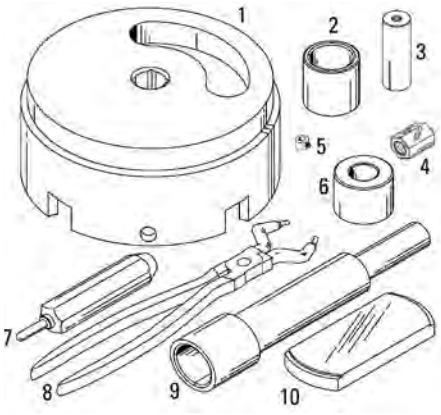
- Used to service final drive and travel motor

154-9320 Spanner Wrench Assembly and 154-9324 Reaction Shaft

- Used to remove and install final drive bearing retainer nut
- Used with three 154-9321 Spacers (later design), three 154-9322 Pins (earlier design), and four 154-9323 Spacers (earlier design)
- Bearing retainer nut can be tightened without using final drive repair bench or any other special holding fixture
- Spanner wrench assembly contains a 6 mm (0.24 in) drill bushing to pilot drill bit when splitting bearing retainer nut (required on earlier design of final drives)

154-9325 Stop Collar

- Used to control depth of drill while splitting retainer nut (earlier design final drives only)
- Locks onto drill bit with allen head setscrew



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Service Tools for Excavators (Continued)

Essential Tool

SMCS Code: 4050-017, 4351-017
Model: 312 and 312B Excavators (Grenoble Version)
Warranty: Six Months

154-9326 Spring Compressor Plate

- Used to compress brake springs for removal and installation of snap ring
- Allows servicing of brake to be done safely and easily

154-9327 Pliers

- Used to hold swash plate at required angle for removal and installation of piston rod

155-1709 Hydraulic Test Adapter

- Used to pressurize brake piston for leakage test
- Leakage can be checked prior to final drive installation

156-1048 Radius Punch

- Used to form seat for retainer nut locking ball and screw

Reference

RENR1113, 312B Excavators Machine Systems Disassembly and Assembly
SENR6139, 311 and 312 Excavators Machine Systems Disassembly and Assembly

Part Number	Description
154-9320	Spanner Wrench Assembly and 154-9324 Reaction Shaft
154-9325	Stop Collar
154-9326	Spring Compressor Plate
154-9327	Pliers
155-1709	Hydraulic Test Adapter
156-1048	Radius Punch

Excavator Service Tools

154-9320 Spanner Wrench Assembly (Item 1)	
Outside diameter	24.13 cm (9.50 in)
Inside diameter	20.18 cm (7.95 in)
Height	10.54 cm (4.15 in)
Square drive	1 in
Slots	4, equally spaced
Slot width	28.0 mm (1.10 in)
154-9321 Spacer (Item 2)	
Outside diameter	52.70 mm (2.075 in)
Inside diameter	40.04 mm (1.576 in)
Height	52.0 mm (2.05 in)
154-9322 Pin (Item 3)	
Outside diameter	24.95 mm (0.982 in)
Height	75.0 mm (2.95 in)
Threaded hole	M10 x 1.5
155-1709 Hydraulic Test Adapter (Item 4)	
Male thread	M5 x 0.8
Female thread	#6 SAE O-ring port
Center hole	1.6 mm (0.06 in)
Hex	22.23 mm (7⁄8 in)
154-9325 Stop Collar (Item 5)	
Outside diameter	12.0 mm (0.47 in)
Inside diameter	6.0 mm (0.24 in)
Thickness	8.0 mm (0.31 in)
154-9323 Spacer (Item 6)	
Outside diameter	52.70 mm (2.075 in)
Inside diameter	25.01 mm (0.985 in)
Height	40.0 mm (1.57 in)
156-1048 Radius Punch (Item 7)	
Tip diameter	4.95 mm (0.195 in)
Overall length	16.00 cm (6.30 in)
Handle	16.0 mm (0.63 in) hex
154-9327 Pliers (Item 8)	
Tip diameter	3.5 mm (0.14 in)
Distance between tips	55.0 mm (2.17 in)
(closed position)	
Overall length	29.7 cm (11.7 in)
154-9324 Reaction Shaft (Item 9)	
Large outside diameter	52.7 mm (2.07 in)
Small outside diameter	24.96 mm (0.983 in)
Counterbore diameter	40.04 mm (1.576 in)
Length	264.0 mm (10.39 in)
154-9326 Spring Compressor Plate (Item 10)	
Outside diameter	14.00 cm (5.51 in)
Hub diameter	13.50 cm (5.31 in)
Thickness	15.9 mm (0.63 in)

9U-7346 Ring Nut Spanner Wrench

SMCS Code: 4350-017, 4351-017
Model: E110B, E120B, 311, 311B, 312, and 312B Excavators
Warranty: Six Months

- Used to remove and install 1R-5839 and 99-7050 Ring Nuts
- Used with 6V-6080 Torque Multiplier
- Makes disassembly and assembly much quicker because spanner wrench allows mechanic easier access to hard-to -reach bearing retainer nut
- Spanner pilots on inside diameter of ring gear, providing positive engagement with ring nuts
- Spanner works on ring nuts with tightening holes or slotted (notched) nuts

Reference

Disassembly and Assembly Modules located in E110B, E120B, 311, 311B, 312, and 312B Excavator Service Manuals

Outside diameter	273 mm (11.0 in)
Inside diameter	229 mm (9.0 in)
Inside diameter clearance	104 mm (4.1 in)
Pin diameter	11 mm (0.4 in)
Distance between pins	245.5 mm (9.67 in)
Number of pins	2
Square drive	1 in
Material	steel

Part Number	Description
9U-7346	Ring Nut Spanner Wrench

9U-7346 Ring Nut Spanner Wrench

Final Drive Ring Gear Retainer Nut Spanner Sockets
Essential Tool

SMCS Code: 4050-017
Model: 303C CR and 305C CR Mini Excavator
Warranty: Six Months

- Used to properly remove and install final drive ring gear retainer nuts
- Used with 3/4 inch drive extension, breaker bar, or torque wrench
- Hardened steel for durability

Reference

RENR9617, Service Manual, 303C CR / 303.5C CR Powertrain Disassembly and Assembly

(Continued)

Final Drive Ring Gear Retainer Nut Spanner Sockets (Continued)

Essential Tool

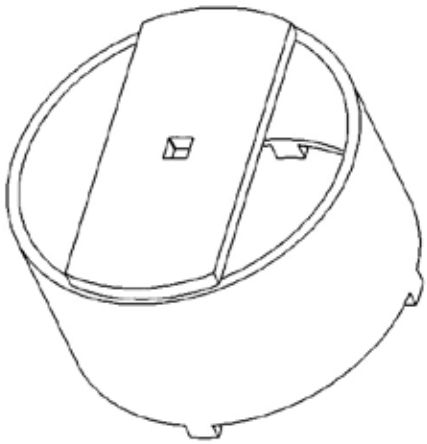
SMCS Code: 4050-017
Model: 303C CR and 305C CR Mini Excavator
Warranty: Six Months

Part Number	Description	Square Drive	Number of Teeth	Width of Teeth	Inside Diameter Between Teeth
289-6052	Spanner Socket	3/4 in	eight	12.7 mm (0.50 in)	145.5 mm (5.73 in)
289-6053	Spanner Socket	3/4 in	four	12.7 mm (0.50 in)	166 mm (6.54 in)

375-4573 Spanner Socket

SMCS Code: 4050-011, 4050-012
Model Usage: 304C, 305C, 305D
Warranty: Six Months

- Used to remove and install final drive nut 309-2682
- Used with 3/4" drive torque wrench or extension
- Hardened steel for durability and black oxide coating to resist corrosion



Specifications	
Square Drive	3/4 in
Inside Diameter Between Teeth	172 mm (6.77 in)
Number of Teeth	4
Width of Teeth	15 mm (.59 in)
Dimensions	184 x 15 x 11 mm (7.25 x 4.56 in)
Weight	3.68 kg (8.1 lbs)
Part Number	Description
375-4573	Spanner Socket

240-1886 Drill Guide Fixture Group

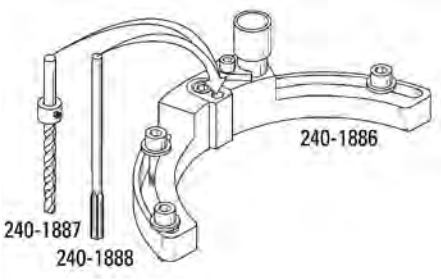
Essential Tool

SMCS Code: 4050-017
Model: 322C and 325C Excavator
Warranty: Six Months

- Used to properly locate, drill, and ream a hole in final drive for stopper nut staking dowel
- Prevents contamination of new bearings (connects to most vacuum systems or portable shop vac to remove metal chips from drill and reaming operation)
- Made from lightweight aluminum
- A drill bit stop collar controls depth of drilled hole

Reference

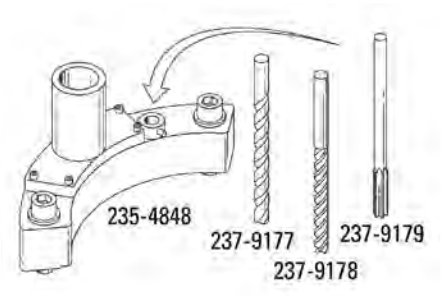
RENR7474, Service Manual, 322C Disassembly and Assembly
RENR5497, Service Manual, 325C Disassembly and Assembly



Part Number	Description
240-1886	Drill Guide Fixture Group
Service/Repair Parts	
240-1887	Step Drill
240-1888	Chucking Reamer

235-4848 Drill Fixture Group
Essential Tool

SMCS Code: 4050-017
Model: 330C Hydraulic Excavator
Warranty: Six Months



- Used to locate and drill a 13 mm (0.51 in) dowel hole to lock bearing retainer nut in place
- Bolts to motor housing stopper nut
- Drills half a hole in bearing retainer nut and half in motor housing
- Eliminates contamination during final drive rebuild procedure by connecting a shop vacuum sweeper to suction port
- Drills, reamer, bolts, and washers are part of group

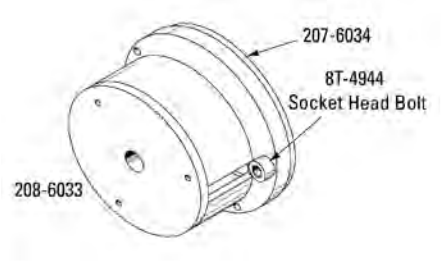
Reference

RENR5438, Service Manual, Disassembly and Assembly

Part Number	Description
235-4848	Drill Fixture Group
Service/Repair Parts	
237-9177	Step Drill
237-9178	Core Drill
237-9179	Reamer
8T-1447	Bolt, M16 x 2
9X-8268	Washer

208-6033 Spanner Socket Group, 208-6034 Measuring Ring
Essential Tool

SMCS Code: 4050-017
Model: 330C and 345C Hydraulic Excavators
Warranty: Six Months



- Used to properly set final drive bearing preload
- Measuring ring simulates thickness of spanner nut
- Bolts to final drive using a predetermined bearing load -- allows assembler to take a measurement which is later used when tightening final drive spanner nut
- Uses 8T-4944 Socket Head Bolt

Reference

330C and 345C Disassembly and Assembly Service Manuals

Part Number	Description
208-6034	Measuring Ring
208-6033	Spanner Socket Group

194-3884 Measuring Ring, 194-3878 Spanner Socket Group

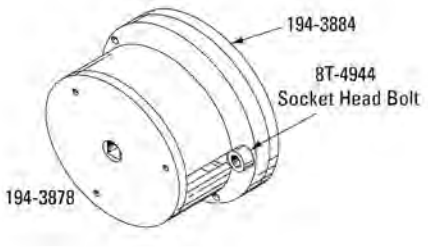
Essential Tool

SMCS Code: 4350-017
Model: 322C and 325C Hydraulic Excavator
Warranty: Six Months

- Used to properly set final drive bearing preload
- Measuring ring simulates thickness of spanner nut
- Bolts (8T-4944 Socket Head Bolt) to final drive using a predetermined bearing load -- allows assembler to take a measurement which is later used when tightening final drive spanner nut

Reference

322C and 325C Service Manuals, Disassembly and Assembly



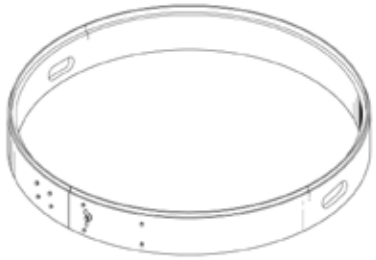
Part Number	Description
194-3878	Spanner Socket Group
194-3884	Measuring Ring

205-8241 Seal Installer Assembly, Stabilized Metal Ring (SMR)

Essential Tool

SMCS Code: 7561-012
Model: 375, 385B, 5080, 5090B Hydraulic Excavators
Warranty: Six Months

- Used to install SMR seals into excavator final drives
- Makes installation faster and much easier
- Provides more reliable seal installation



Material	plastic
Outside diameter	590.0 mm (23.23 in)
Inside diameter	550.0 mm (21.65 in)

Part Number	Description
205-8241	Seal Installer Assembly, Stabilized Metal Ring (SMR)
Service/Repair Parts	
7H-1246	Machine Screw - Machine (Pan Head)
4B-4276	Flat Washer
1F-1739	Wing Nut

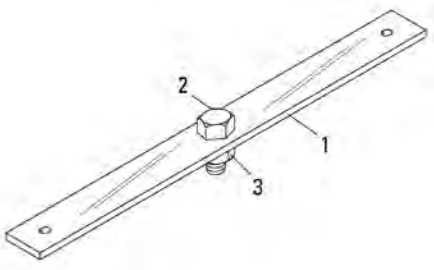
FT2766 Rolling Torque Bar

SMCS Code: 4050-036
Model: 311B, 311C, 312B, and 312C Excavators
Warranty: None

- Used to check final drive bearing preload
- Material: SAE1018 steel

Reference

RENR5503, Service Manual, 312C Excavator

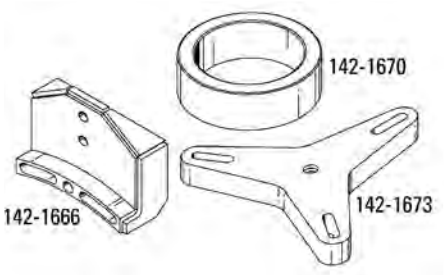


Item	Part Number
1	Plate

Item	Part Number	Description
2	0S-1624	Bolt
3	4K-0367	Nut - Full

142-1666 Steering Clutch and Final Drive Bracket Assembly
142-1670 Bearing Spacer, 142-1673 Press Plate

SMCS Code: 4050-010, 015, 016
Model: D11R and D11R Carry Dozer
Warranty: Six Months



European Union compliant, CE marked (142-1666)

- Used to remove, install, disassemble, and assemble final drive

Part Number	Description
Plate press is used with additional tooling to remove hub and bearing cone	
--	Hand Pump Group or Electric Hydraulic Pump
--	Cylinder Group

Part Number	Description	Use
142-1666	Bracket Assembly - Steering Clutch and Final Drive	Remove and install final drive assembly
142-1670	Bearing Spacer	During assembly to set proper preload on bearings
142-1673	Plate - Press	Remove hub and bearing cone from hub assembly
Plate press is used with additional tooling to remove hub and bearing cone		
9U-5267	Stud (3)	--
8M-9011	Puller (1)	--
1P-0543	Fast Runner Nut (3)	--
3K-5234	Washer (3)	--

FT2519 Rolling Torque Brackets

SMCS Code: 3258-036
Model: CS531, CS563, CS573, and CS583 Compactors
Warranty: None

Locknut Bracket

- Used to tighten locknut that retains bearing on differential input shaft
- Bracket can be easily manufactured
- Material: SAE1018 steel
- Overall stock size (W x L x T): 76.2 x 415.0 x 6.35 mm (3.0 x 16.30 x 0.25 in)

Axle Rotation Torque Bracket

- Used to check rotation torque on one end of axle
- Bolts directly onto “trumpet tube”
- Material: SAE1018 steel
- Overall stock size (W x L x T): 50.8 x 445.0 x 6.35 mm (2.00 x 17.50 x 0.25 in)

Differential Torque Bracket

- Used to check differential and pinion shaft torques
- Bolts to differential shaft with one ID and pinion shaft with the other ID

References

KENR2583, Service Manual
KENR2663, Service Manual
KENR2693, Service Manual

(Continued)

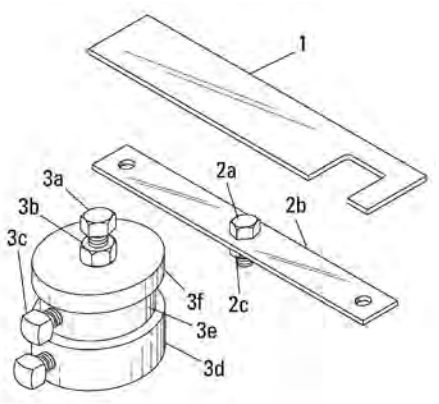
FT2519 Rolling Torque Brackets (Continued)

SMCS Code: 3258-036
Model: CS531, CS563, CS573, and CS583 Compactors
Warranty: None

Description	Material	Inside Diameter	Outside Diameter	Width	Threaded Hole
Tube	SAE1026 steel	65.2 mm (2.57 in)	76.3 mm (3.00 in)	31.8 ± 0.5 mm (1.25 ± 0.04 in)	3/8 - 16
Tube	SAE1026 steel	81.1 mm (1.50 in)	63.5 mm (2.50 in)	31.8 ± 0.5 mm (1.25 ± 0.04 in)	3/8 - 16
Tube	SAE1018 steel	73.0 ± 1.0 mm (2.87 ± 0.04 in)	12.7 ± 0.5 mm (0.50 ± 0.02 in)	3/8 - 16	

FT2519 Rolling Torque Brackets

Item	Description	Dimension
1	Locknut Bracket	
2	Axle Rotation Torque Bracket	
2b	Plate	
3	Differential Torque Bracket	
3d	Tube	76.2 x 5.56 diameter wall x 31.8 long
3e	Tube	63.5 x 12.7 diameter wall x 31.8 long
3f	Plate	73 mm x 12.7 thick

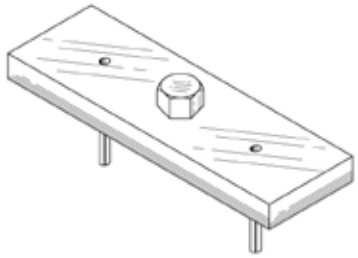


Item A	Part Number	Description	Dimensions
2a	0S-1624	Bolt	5/8-11 x 25 mm (1.0 in) long
2c	4K-0367	Nut - Full	5/8-11
3a	0S-1591	Bolt	3/8-16 x 38.1 (1.50 in) long
3b	9S-8752	Nut - Full	3/8-16
3c	4B-3574	Set Screw - Square Head	3/8-16 x 19.05 (0.75 in) long

FT2803 Rolling Torque Bracket

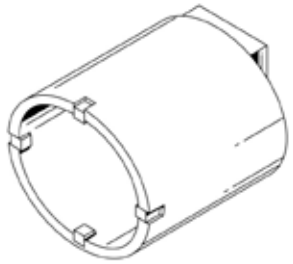
SMCS Code: 3258-036
Model: 637G Wheel Tractor Scraper
Warranty: None

- Used to check rolling torque on bevel pinion after preloading differential pinion bearings
- Slides into splines of pinion shaft
- Made from SAE1018 steel, one 031-0218 Bolt, and two 2K-8467 Spring Pins



6V-7920 Pinion Nut Spanner Wrench

SMCS Code: 3254-010, 4056-010
Model: Various Models
Warranty: Six Months



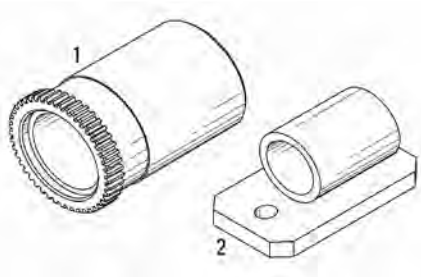
- Used to remove and install 5P-5813 Pinion Nut from the final drive/differential — provides dealers with greater cost value and combined application tooling
- Used with square drive breaker bar or torque wrench
- Improved design allows the spanner wrench to be used both on the wheel loaders and compactors

Overall length	184.0 mm (7.25 in)
Inside diameter	85 mm (3.37 in)
Number of teeth	4
Square drive	3/4 in

Part Number	Description
6V-7920	Pinion Nut Spanner Wrench

Final Drive Tooling
Essential Tool

SMCS Code: 4050
Model: MT735, MT745, MT755, and MT765 Challengers
Warranty: Six Months



- Used to remove and install 287-2171 Retaining Nut from 267-5582 Final Drive
- Used with 6V-6080 Torque Multiplier (dealer supplied)
- 312-3575 Driver Assembly features 1 inch square drive (fits 6V-6080 Torque Multiplier) and is made from hardened steel for long service life
- 312-3576 Anchor fastens to final drive and acts as reaction arm anchor for torque multiplier

Item	Part Number	Description
1	312-3575	Driver Assembly
2	312-3576	Anchor

Cab Support Brackets

SMCS Code: 3278-010
Model: Challenger 35, 45, and 55
Warranty: Six Months

- Used to support cab after rear axle housing has been removed (required only if rear mount supports are removed)
- Designed to fit between center housing and cab rails

Reference
SENR8300, Service Manual

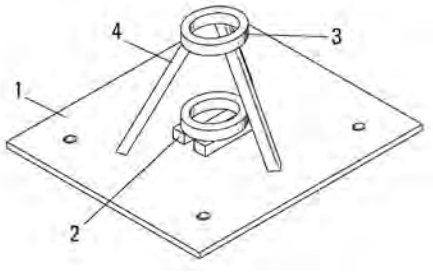
Part Number	Description
1U-9495	Left Cab Support Bracket
1U-9496	Right Cab Support Bracket

FT2768 Final Drive Disassembly and Assembly Stand

Model: All MT700 and MT800 Series GEN 111 Ag Tractors
Warranty: None

- Used to correctly assemble and disassemble final drive assembly
- Material: SAE 1020 Mild Steel except Item 3 which is SAE1026 Steel

Item	Description
1	Base Plate
2	Square Bar
3	Tube Ring
4	Angle Leg



FT2760 Torque Ring Assembly

Model: All Models of MT-700 Series GEN 111 Ag Tractors
Warranty: None

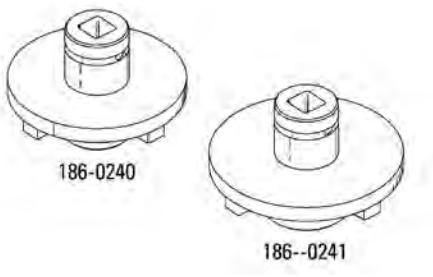
- Used to remove and install 9X-6618 Hex Bolt in final drive assembly
- Used with standard torque wrench tooling
- Allows bolt to be correctly tightened to proper torque
- Requires one 6V-3540 Dowel and one McMaster-Carr 6381K381 Bearing Sleeve (machined to proper thickness)
- Material: SAE1020M

Axle Nut Spanner Wrenches

SMCS Code: 0722-010
Model: 966G and 972G Wheel Loaders
Warranty: Six Months

- Used to remove and install differential axle locking nut
- Hardened to provide longer tool life
- Can be used with an impact wrench

Outside diameter:	
186-0240	160 mm (6.3 in)
186-0241	203 mm (8.0 in)
Tooth width	20.6 mm (0.811 in)
Number of teeth	4, equally spaced



Part Number	Description
186-0240	Axle Nut
186-0241	Axle Nut

214-3064 Seal Installer

SMCS Code: 4050
Model: MT700 Series Challenger Ag Tractors
Warranty: Six Months

- Used to correctly install 172-1619 Final Drive Seal Group
- One-piece design made from strong and durable plastic
- Durable enough to last a machines lifetime (under normal usage)

Part Number	Description
214-3064	Seal Installer

360-4222 Seal Installer
Essential Tool

SMCS Code: 4050-012
Model: 279C, 289C, and 299C Compact Track Loaders
Warranty: Six Months

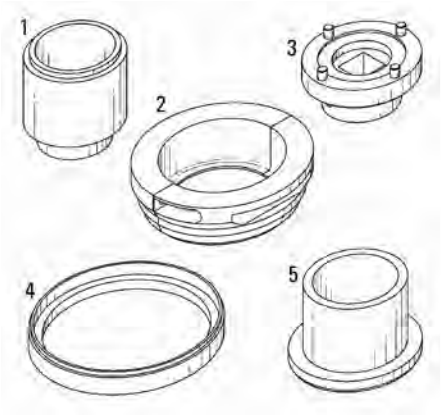
- Replaces canceled 312-0202 Seal Installer
- Used to correctly install 278-8725 Duo Cone Seal on final drive motor
- Required for easy, reliable installation without damaging seals
- Machined grooves securely hold seal to prevent rolling and twisting
- Made from durable high strength plastic
- Protects related components during seal installation

Reference
KENR8831, 279C, 289C, and 299C Compact Track Loaders, Power Train

Part Number	Description
360-4222	Seal Installer

Compactor Final Drive Tooling
Essential Tool

SMCS Code: 5061-015, 5061-016, 5655-015, 5655-016
Model: CB-113 Compactor
Warranty: Six Months



- Used for disassembly and assembly of CB-113 Compactor Final Drive
- Aids in removal and installation of seals, lock nuts, and bearings on final drive planetary
- All parts made of durable steel construction

Reference
QENR2006, CB-113 Compactor Machine Systems Disassembly and Assembly

(Continued)

Compactor Final Drive Tooling (Continued)
Essential Tool

SMCS Code: 5061-015, 5061-016, 5655-015, 5655-016
Model: CB-113 Compactor
Warranty: Six Months

Item	Part Number	Description	Use
1	314-8758	Installer	Remove seal ring during disassembly and install bearing and seal ring during assembly
2	314-8757	Remover Assembly	Remove bearing during disassembly
3	314-8754	Spanner Assembly	Remove and install ring nut during disassembly and assembly
4	314-8756	Installer	Install seal during assembly
5	314-8755	Installer	Install multiple rings and bearings during assembly

314-9075 Bearing Puller, 314-9076 Seal Installer
Essential Tool

SMCS Code: 5655-015, 5061-016
Model: CB-113 and CB-114 Compactor Final Drive
Warranty: Six Months

314-9075 Bearing Puller

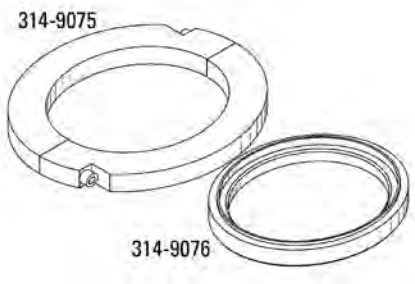
- Used to remove bearing from flanged hub on final drive planetary during disassembly
- Used with 4C-3085 Two Jaw Puller and 1P-0510 Driver Group
- 2-piece, steel design provides proper clamping force
- Serviceable part: 8T-9535 Socket Head Bolt

314-9076 Seal Installer

- Used to correctly install half seal on final drive flanged hub during assembly
- 1-piece design made from durable steel

Reference

KENR6008, Disassembly and Assembly, CB14 Vibratory Compactor Machine Systems



Part Number	Description
314-9075	Bearing Puller
314-9076	Seal Installer

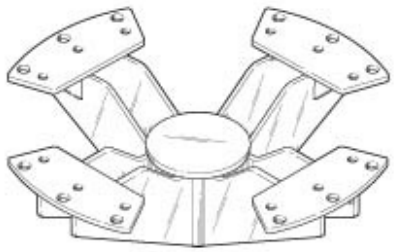
Puller Assembly Used to Assemble D9T, D10T, and D11T Final Drive
360-4423 Puller Assembly

SMCS Code: 4050-015
Model Usage: D9T, D10T, and D11T Track-Type Tractors
Warranty: Six Months

Part Number	Description
360-4423	Puller Assembly

- Used to aid in disassembly of 282-4029 and 324-2343 Final Drives
- Used with 346-5029 Cylinder Group
- Tool assembly is painted to prevent rust

Overall Height	281.5 mm (11 in)
Overall Diameter	895 mm (35.25 in)
Weight	72 kg (159 lbs)



365-4754 Socket
Essential Tool

SMCS Code: 3256-016-FR, 3258-016-FR, 3260-016-FR
Model Usage: 450E Backhoe Loader
Warranty: Six Months

- Used to set rotating torque during assembly of differential
- Used with 3/4 inch square drive ratchet
- Socket fits over spline of pinion shaft

Reference

KENR5485, 450E Backhoe Loader Power Train, Axle Housing (Differential and Bevel Gear, Rear) Assemble

Length	90.37 mm (3.55 in)
Diameter	49.81 mm (1.96 in)
Weight	.337 kg (.75 lb)

Part Number	Description
365-4754	Socket

1U-5230 Hydraulic Hand Pump

SMCS Code: 1100-015, 1100-011, 1200-010, 1200-017, 1200-020, 1300-016
Model: Most Cat® Models
Warranty: Six Months

- Operates single-acting rams such as 1P-0820 Puller Group, gears and bearings pullers, shop presses; can be used in other hydraulic tool applications
- Can be operated in horizontal or vertical position with pump head at lower end
- Has finger tip control valve for instant pressure release or pumping action
- Features built-in overload valve
- Attaches to puller tools or presses with hose assembly and coupler assemblies (not included with pump)
- 1U-5229 Repair Kit also available; includes balls, springs, seals and washers required for normal servicing of 1U-5230

Maximum pressure	69,000 kPa (10,000 PSI)
Piston diameter	12.7 mm (1/2 in)
Piston stroke	20.6375 mm (13/16 in)
Oil port	3/8 in NPTF
Reservoir capacity	902 cc (55 in^3)
Volume per stroke	2.624 cc (0.160 in^3)
Weight	8.626 kg (19 lb)

Not included with pump		
Part Number	**Description**	**Qty.**
1P-2375	Coupler Assembly Quick Connective (Male)	2
1P-2376	Coupler Assembly Quick Connective (Female) (2)	2
1U-5229	Repair Kit	--
1U-5230	Hand Pump	--
8F-0024	Hose Assembly	--

1P-0545 Tire Pressure Gauge Group

SMCS Code: 4200-082
Model: Most Cat® Models
Warranty: Six Months

Part Number	Description
1P-0545	Tire Pressure Gauge Group

- Checks pressure on either large bore earthmover or small bore automotive type tire valves
- Can be used on tires with liquid ballast
- Scales read in kPa and PSI
- Includes plastic pouch

336-8984 Inflater Adapter
Essential Tool

SMCS Code: 4200-044, 4200-045
Model: 793F, 795F, and 797F Off-Highway Trucks
Warranty: Manufacturer's

- Used to connect nitrogen supply line to Mega Bore tire valve body
- Threads onto tire valve body with knurled nut turned in a clockwise direction
- Internal o-rings seal inflator adapter to valve body
- Solid brass construction
- Other fittings or shut off valves can be attached to 3/4 - 14 NPT threaded connection

Part Number	Description
336-8984	Inflater Adapter

4S-6524 Tire Pressure Gauge

SMCS Code: 4200-082
Model: Most Cat® Models
Warranty: Six Months

- Used to check tire pressure on all Cat machines equipped with pneumatic tires
- Heavy-duty gauge with swivel head

Part Number	Description
4S-6524	Tire Pressure Gauge

1U-5751 Tire Tread Depth Gauge

SMCS Code: 4200-082
Model: Most Cat® Models
Warranty: Six Months

- Replaces discontinued 2P-2310 Tire Tread Depth Gauge
- Provides quick, accurate way to measure amount of tread remaining on used tire
- Range: 152.4 mm (6.0 in) [Compared to discontinued 2P-2310 range of 127.0 mm (5.0 in)]

Part Number	Description
1U-5751	Tread Depth Gauge

7S-9394 Air Service Connection Assembly

SMCS Code: 4203-045
Model: 436
Warranty: Six Months

- Used to inflate all pneumatic tires used on Cat® equipment as well as automotive tires
- Has quick disconnect air chuck and hand valve for control of air flow
- 1P-3552 Extension also required for servicing tires where theres a clearance problem between stem and rim

Item	Part Number	Description
--	7S-9394	Air Service Connection Assembly
1	1P-3551	Chuck
2	7K-3468	Clip-on Chuck

1P-3552 Tire Valve Extension

SMCS Code: 4200-036
Model: Most Cat® Models
Warranty: Six Months

Part Number	Description
1P-3552	Tire Valve Extension

- Used where there's a clearance problem between stem and rim

5F-9999 Adapter

SMCS Code: 4200-036
Model: Most Cat® Models
Warranty: Six Months

Part Number	Description
5F-9999	Adapter

- Required to reduce jumbo valve thread to standard when necessary to use standard automotive equipment to inflate earthmoving tires with jumbo size valves

178-3832 Tank Valve
Essential Tool

SMCS Code: 4200
Model: PS-150B, PS-200B, PS-360B Pneumatic Compactors
Warranty: Six Months

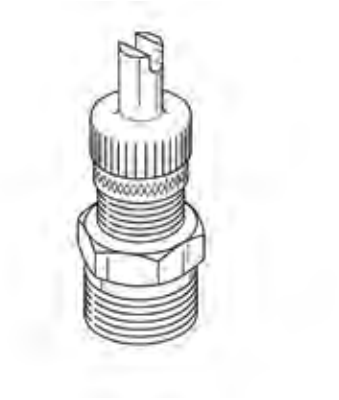
- Used to check and set high and low pressure regulator settings for air-on-the-run systems
- Used with 3B-7764 Reducing Bushing
- Must be used to set high/low pressures after replacing pressure regulator switch
- Easily connects to air-on-the-run tank
- Equipped with standard valve core and sealing cap

Reference

KENR2721, Service Manual; Supplement for PS-150B, PS-200B, PS-360B Pneumatic Compactors Air-on-the-Run System

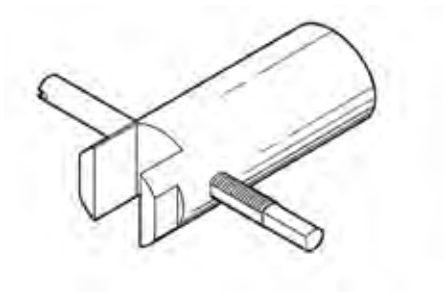
Thread	1/4 NPT
Maximum pressure rating	1378 kPa (200 PSI)
Overall length	38 mm (1.5 in)
Material	brass

Part Number	Description
178-3832	Tank Valve



7F-8240 Tire Valve Repair Tool

SMCS Code: 4200-023
Model: Most Cat® Models
Warranty: Six Months

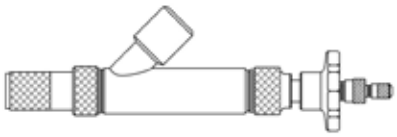


- 4-way tool used to remove and install valve cores on wheel-type machines
- Equipped with tap and die for rethreading cap and core threads in tire valves

Part Number	Description
7F-8240	Tire Valve Repair Tool

135-8290 Inflator Adapter

SMCS Code: 4200-044, 4200-045
Model: All Wheeled Models with Super Large Bore Valve Stems (see detailed list below)
Warranty: Six Months



- Used to quickly and efficiently inflate large tires (inflator adapter removes valve core for unrestricted flow into tire)
- Used with tires having super large bore valve stems
- Works by threading inflator adapter onto valve stem of tire; adapter stem engages valve core; valve core is removed and stored inside inflator adapter; tire is inflated/deflated; pressure is checked; valve core is reinstalled
- Can be used with air or liquid-filled tires (unique design prevents valve core from being exposed to liquid during filling process)
- Charging tires with inflator adapter can reduce inflation times by up to 60 percent, and reduce deflation times by up to 80 percent
- Saves a significant amount of time because current “super large” valve stems are still using “large” valve cores (current valve cores act as an orifice, restricting air/fluid flow into tire)
- Tire pressure can be checked as tire is inflated, using standard or large bore pressure gauges (check pressure through stem knob on end of inflator adapter)
- All parts are made from brass, except for stainless steel internal collet and aluminum handle

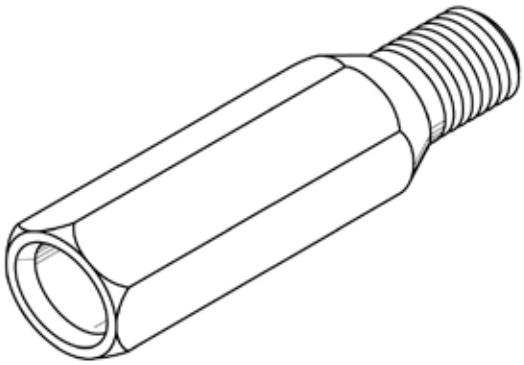
Valve stem threaded connection	11/16 in - 24 thd
Air hose connection	1/2 in NPT
Weight	1.4 kg (3 lb)
Wheel loader models	994, 994F, 992, 992C/D/G, 990, 988, 988B/F, 980G
Wheeled tractor models	824G, 825G, 834G, 836
Off-highway truck models	776, 776B, 777, 777B, 783, 783B, 784, 784B, 785, 785B, 787, 787B, 789, 789B, 793, 793B/C

Part Number	Description
135-8290	Inflator Adapter

FT0891 Modified Extension Assembly

SMCS Code: 4200-036
Model: 920 Wheel Loader
Warranty: None

- Used for hydro-inflating standard tires
- Body thread accepts Schrader No. 5791 Air-liquid Adapter



5P-3975 Rubber Lubricant, 3.79 L (1 gal)

SMCS Code: 1360-010
Model: 994
Warranty: Six Months

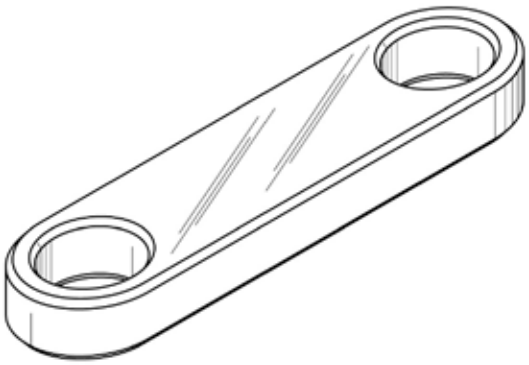
- Useful and almost indispensable product when servicing tires, especially Cat® beadless tires
- Used for installation and removal of rims and installation of mounting belts for beadless tire service
- Applied with 5P-0293 Sprayer Group
- Cat® has long recommended rubber lubricant for mounting conventional earth-mover tires; soaps should not be used because they can cause corrosion and rubber deterioration

Part Number	Description
5P-3975	Rubber Lubricant, 3.79 L (1 gal)

FT1087 Cushion Track Wrapping Adapter

SMCS Code: 4150-010
Model: Cat® Models with Cushion Track
Warranty: None

- Used to facilitate track installation on front driver on loaders equipped with Dystred cushion track
- Provides means for attaching fork end of link to driver, allowing installation with track laid out in front of front driver
- Material: SAE 1020 steel



5P-2968 Jack Group

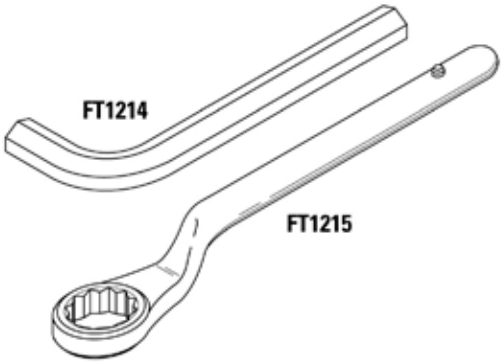
SMCS Code: 4200-010
Model: 12G, 120G, 130G, 14G, 140G
Warranty: Six Months

- Used to remove front axle spindle

Part Number	Description
5P-2968	Jack Group

FT1214 Valve Stem Plug Wrench
FT1215 Plug Wrench

SMCS Code: 4200-011
Model: Most Cat® Models
Warranty: None



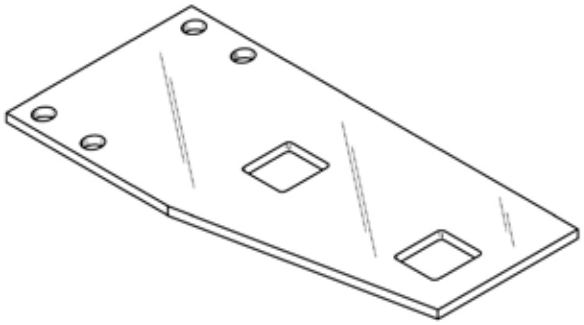
- Used for servicing 1R500 Cat beadless carcass
- FT1214 Wrench used to remove 9K-7999 Strainer Assembly
- FT1215 Wrench used to remove 9S-8010 Plug

⚠ WARNING

Do not remove the plug or the strainer assembly with air in the carcass.

FT0919 Bracket

SMCS Code: 4200-010
Model: 773 Truck
Warranty: None



- Used with hydraulic service tools to remove front wheel spindle from support strut (2 required)
- Material: SAE 1020 steel

Valve Plate Repair Adapters

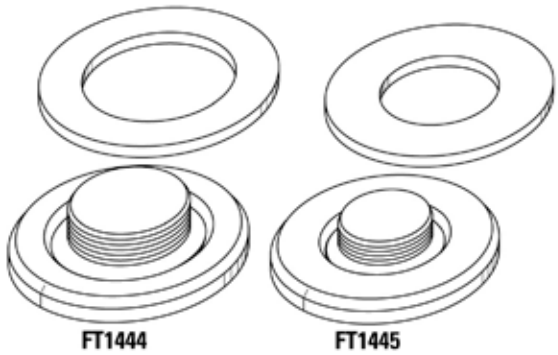
SMCS Code: 4200-023
Model: See Below
Warranty: None

- Used for making repairs to leaks around valve plates on beadless tires
- Drawings show 2 parts, repair ring and repair adapter; both needed when both valve plates on carcass need repair

Reference

Service Magazine, August 6, 1979 (instructions for installation of adapters)

Part No.	Model
FT1444	988
FT1445	992



162-4204 Support Plate Assembly

Essential Tool

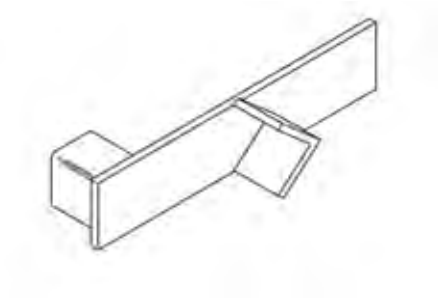
SMCS Code: 4205-011
Model: 24H Motor Grader
Warranty: Six Months

- Provides a flat reaction surface and supports hydraulic ram during removal of spindle
- Quickly and easily installs without bolts
- Overall dimensions: 101 x 330 x 202 mm (4.0 x 13.0 x 8.0 in)
- Weight: 3.6 kg (8 lb)

Reference

SENR1438, Service Manual, 24H Motor Grader Machine Systems Disassembly and Assembly

Part Number	Description
162-4204	Support Plate Assembly



FT2626 Plate Assembly

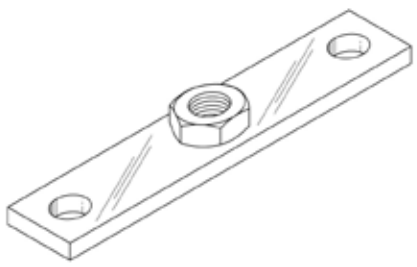
Essential Tool

SMCS Code: 4205-036
Model: 24H Motor Grader
Warranty: None

- Used to properly measure adjustment of front spindle bearing rolling torque
- Used with standard 3/4 inch socket and torque wrench
- Allows spindle to be rotated during assembly procedure while taking torque measurements
- Material: SAE1018 steel

Reference

SENR1438, Service Manual, 24H Motor Grader Machine Systems Disassembly and Assembly



7F-6068 Sleeve Assembly

SMCS Code: 4208-010
Model: 112, 12, 14 Motor Graders
Warranty: Six Months

- Used with 9S-8900 or 7F-9831 Cylinder Group to remove or install wheel assemblies on later No. 112, 12, and 14 Motor Graders

Part Number	Description
7F-6068	Sleeve Assembly

6V-4040 Nitrogen Tire Inflation Group

SMCS Code: 4200-045
Model: 436, 637E, 785, 789
Warranty: Six Months

- Used to inflate conventional and beadless tires with nitrogen from compressed gas cylinders available from local suppliers
- Chucks provided for both standard and large bore valves; chucks connect to 8.1 m (26.5 ft) hose with quick disconnect fittings
- Regulator and safety relief valve restrict working pressure to that comparable to air system

Reference
SMHS7867, Special Instruction
NOTE:
The 175-5507 Charging Group for accumulators is not recommended for tires due to the associated higher pressure and increased line flow restrictions.

Service/Repair Part for 6V-4040 Group (with no part number)	
Item	Description
3	Hose Assembly (not serviced)

Item	Part No.	Description
--	6V-4040	Nitrogen Tire Inflation Group
	Available separately	
1	9U-6219	Tool Box
2	2P-8289	Block - Tool Holder
	Service/Repair Parts for 6V-4040 Group	
4	8S-4599	Coupling Assembly
5	1P-3551	Chuck
6	2S-5244	Nipple, Quick Disconnect (2)
7	6V-4038	Chuck
8	6V-4039	Relief Valve, 1137 kPa (165 PSI)
9	8S-4600	Nipple, Q.D.
10	8S-1506	Coupling Assembly
11	6B-5072	Reducing Bushing (2)
12	1Y-0413	Tee - Pipe
12	5P-8998	Nipple - Pipe
14	7J-8611	Elbow 90° - Pipe

(Continued)

6V-4040 Nitrogen Tire Inflation Group (Continued)

SMCS Code: 4200-045
Model: 436, 637E, 785, 789
Warranty: Six Months

Item	Part No.	Description
Service/Repair Parts for 6V-4040 Group (Continued)		
15	6V-4037	Regulator - Nitrogen, 0 -1379 kPa (0 - 200 PSI) (6V-7879 Adapter available for connecting to nitrogen bottles with 5/8 in B.S.P. right hand threads, from sources outside U.S., such as U.K. and Australia)

1U-6313 Adapter

SMCS Code: 4203-045
Model: Most Cat® Models
Warranty: Six Months

- Used with 6V-4040 Nitrogen Tire Inflation Group to allow vehicle to fill its tires from its own air system
- Required option for vehicles in isolated locations where nitrogen is not readily available; machines shipped to certain countries require on-board capabilities to air service vehicles tires
- One end of adapter connects to 0.965 inch-14 NGO-RH thread of 6V-4037 Regulator in tire inflation group; other end of adapter has 1/4 inch-18NPTF internal thread used for attaching required pipe fittings to connect with vehicle's air system
- Quick disconnect fittings can be used to make repetitive connections fast and easy; chart lists fittings necessary to connect adapter to any motor grader, tractor scraper, off-highway truck or tractor, wheel loader or lift truck with an air compressor; not all fittings listed will be used in every installation
- If 6V-7879 Adapter has been installed on 6V-4037 Regulator, it must be removed to install 1U-6313 Adapter; 6V-7879 allows direct connection of regulator to nitrogen containers with 5/8 inch-14 BSP threads often used in Australia and United Kingdom

Part Number	Description	Detail
1U-6313	Adapter	--
Fitting List		
003-8470	Pipe Tee	3/8 in - 18 NPTF
2S-5244	Quick Disconnect Nipple	1/4 in - 18 NPT external
3B-6488	Pipe Coupling	1/4 in - 18 NPT
3J-5390	Plug - NPTF (Ext Hex) 3/8 in-18 NPTF external to 1/8 in-27 NPTF internal	3/8 in - 18 NPT x 11/16 in hex
4F-0186	Nipple - Pipe	3/8 in - 18 NPT x 76.2 mm (3 in) long (2)
5H-7598	Nipple - Pipe	1/4 in - 18 NPT x 76.2 mm (3 in) long
5M-6213	Plug - Pipe	1/4 in - 18 NPT x 9/16 in hex
5S-2403	Fitting - Reducing Nipple	3/8 in - 18 NPTF external x 1/4 in - 18 NPTF external
6D-4045	Hose Assembly	1/4 in - 18 NPT external x 68.58 cm (27 in) long

(Continued)

1U-6313 Adapter (Continued)

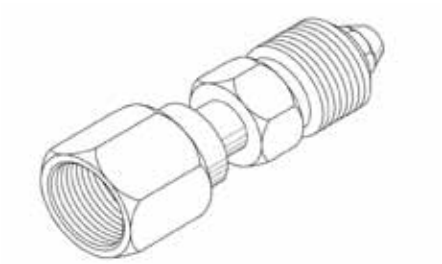
SMCS Code: 4203-045
Model: Most Cat® Models
Warranty: Six Months

Part Number	Description	Detail
	Fitting List (Continued)	
8S-4599	Coupling Assembly - Quick Disconnect	1/4 in - 18 NPT internal
8S-4600	Nipple (2)[1]	1/4 in - 18 NPT internal

[1] Other nipples available for gauge attachment are: 2S-5244, 1/4 in NPT External Thread

6V-7879 Nitrogen Regulator Adapter

SMCS Code: 4203-045
Model: Most Cat® Models
Warranty: Six Months



- Used to connect 162-4146 Regulator, part of 175-5507, and 6V-4037 Regulator, part of 6V-4040 Nitrogen tire inflation group, to nitrogen bottles from some sources outside U.S.
- 960-14 NGO internal right-hand thread and 5/8 B.S.P. external right-hand thread
- Permits 162-4146 and 6V-4037 Regulators to be used on nitrogen bottles with shutoff valves having 5/8 B.S.P. internal right-hand thread

Part Number	Description
6V-7879	Nitrogen Regulator Adapter

994 Wheel Loader Tools

SMCS Code: 4202-010
Model: 994 Wheel Loader
Warranty: Six Months

- Used to remove and install tires and rims
- One-man operation to safely, accurately remove and install wheel-mounting nuts that 1) require torque and turn procedure that results in torque of up to 2856 N•m (2100 ft-lb) and 2) are located in recessed area that requires fairly long extensions
- Used with 6V-6080 Torque Multiplier and 8T-5230 Air Regulated Wrench
- Reaction bar holds all tooling together and provides required reaction arm
- 1 inch drive sockets and extensions should not be used, as their recommended maximum torque is around 1632 N•m (1200 ft-lb); special 1 inch drive on 6V-6080 Torque Multiplier is capable of 4350 N•m (3200 ft-lb)
- All items designed to be used with 6V-6080 Torque Multiplier which has a maximum capacity of 4350 N•m (3200 ft-lb)

4C-9812 Socket	
46 mm (1 13/16 in) hex by #5 spline drive, impact O.A.L.	86.0 mm (3.38 in)
OD at hex end	67.0 mm (2.64 in)
4C-9813 Extension	
1 in female square drive by #5 spline male drive O.A.L.	387 mm (15 1/4 in)
4C-9814 Reaction Bar	
Dimensions	70.0 x 381.0 x 25.4 mm (2.75 x 15.0 x 1.0 in)

Reference for 994 Wheel Loader Tools

SENR4747, Disassembly and Assembly Module, 994 Power Train

Item	Part Number	Description
1	4C-9814	Reaction Bar
2	4C-9813	Extension
3	4C-9812	Socket
4	6V-6080	Torque Multiplier
5	8T-5230	Wrench, Air Regulated

Tools assembled with "used with" tools

194-7886 Drive Extension

SMCS Code: 4210-010
Model: 793 Off-Highway Trucks
Warranty: Six Months

Part Number	Description
194-7886	Drive Extension

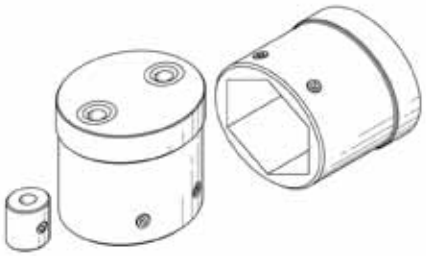
- Used to remove and install wheel lug nuts
- Allows one-man operation with torque capacities up to 2750 N•m (2000 ft-lb)
- Used with 194-7586 Pneumatic Wrench Group
- Square drive: 1 inch, each end
- Overall length: 305 mm (12 in)

331-2819 Lug Nut Splitter Assembly Essential Tool

SMCS Code: 4202
Model: 785C Off-Highway Truck
Warranty: Six Months

Part Number	Description
331-2819	Lug Nut Splitter Assembly

- Used to remove lug nuts when wheel stud rotates during removal
- Used with 6.35 mm (.25 in) drill bit and suitable pneumatic or electric drill (dealer supplied)
- Features two set screws to clamp tool onto lug nut (requires dealer supplied 3/16 inch Allen wrench)
- Includes stop collar to limit drill bit depth (requires dealer supplied 3/32 inch Allen wrench)
- Two drill guide bushings allow precise drilling of lug nut on both sides of wheel stud
- Effectively weakens and splits lug nut for easier removal
- Durable black oxide coating to prevent corrosion
- Heavy-duty welded steel construction



Wheel Bearing Nut Spanner Wrenches

SMCS Code: 6V-4073 — 4050-010; 5P-2978 — 4200-010, 7560-010
Model: 6V-4073 — 922, 943, 953; 5P-2978 — IT18B, 508, 528, 916, 926, 936, 936E, 944, 950, 966
Warranty: Six Months

- 6V-4073 Wheel Bearing Nut Spanner Wrench replaces discontinued 5P-2977 Spanner Wrench; both improved wrench and discontinued wrench can be used to remove and adjust wheel bearing nuts
- 5P-2978 Wheel Bearing Nut Spanner Wrench used for same purpose on different models

Part Number	Description
6V-4073	Wheel Bearing Nut Spanner Wrench
5P-2978	Wheel Bearing Nut Spanner Wrench

5P-3044 Retaining Nut Spanner Wrench

SMCS Code: 4200-010
Model: 966, 950, 816, 815, 814, 528
Warranty: Six Months

- Used to remove wheel and to adjust bearing preload on 966, 950, 816, 815, 814 and 528 machines which have 9K-6198 Wheel Bearing Retaining Nut

Reference
Service Manuals (preload procedures)

Part Number	Description
5P-3044	Retaining Nut Spanner Wrench

FT1499 Wheel Bearing Retaining Nut Spanner Wrench

SMCS Code: 4200-010
Model: 623B Scraper
Warranty: None

- Used to adjust oil-lubricated wheel bearings on 623B Scrapers effective with 46P-1383
- Use torque computer, SEHS7150, to calculate torque wrench reading
- Effective length: 203 mm (8 in)

176-0404 Retaining Nut Spanner Wrench

SMCS Code: 4050-017, 0700, 0730
Model: 554 and 574 Forwarders
Warranty: Six Months

Part Number	Description
176-0404	Retaining Nut Spanner Wrench

- Used to remove final drive bogey retaining nut
- Square drive: 3/4 inch
- Number of teeth: 4

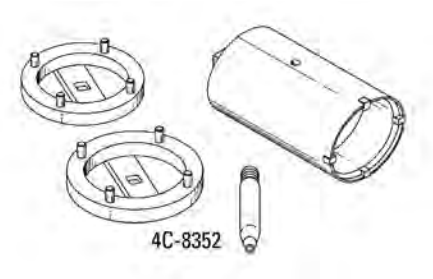
Guide Bolt and Bearing Retaining Nut Spanner Wrenches

SMCS Code: 4202-710, Guide Bolt; 3013-017, Spanner Wrench
Model: See Below
Warranty: Six Months

- Two guide bolts allow one person to easily remove and install tire and wheel
- Spanner wrenches used to disassemble and assemble bearing retaining nuts in axle housing
- Square drive: standard 3/4 inch

References

SENR4920, Service Manual, 950F Wheel Loaders
SENR4765, Service Manual, 966F Wheel Loaders
SENR5760, Service Manual, 918F Wheel Loaders
SENR5230, Service Manual, 936F Wheel Loaders



Part Number	Description	Model
4C-8352	Guide Bolt	--
4C-8345	Bearing Retaining Nut Spanner Wrench	936F, 950F, 518C
4C-8346	Bearing Retaining Nut Spanner Wrench	936F, 950F, 518C, 928F, IT18F, IT28F
4C-8348	Bearing Retaining Nut Spanner Wrench	928F, 966F
4C-8349	Bearing Retaining Nut Spanner Wrench	966F
4C-8500	Bearing Retaining Nut Spanner Wrench	966F
4C-8347	Bearing Retaining Nut Spanner Wrench	918F
4C-8502	Bearing Retaining Nut Spanner Wrench	918F, IT18F

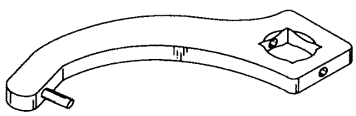
4C-8155 Locknut Spanner Wrench

SMCS Code: 4201-010
Model: 143H and 163H Motor Graders with All Wheel Drive
Warranty: Six Months

- Used to remove and install 5T-1428 Locknut from front wheel spindle
- Used with 3/4 inch square drive ratchet or torque wrench
- Designed to fit inside wheel housing (no other tool will properly remove and install this locknut without extensive damage to locknut and mating parts)

Reference

Service Manual Module



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4C-8155 Locknut Spanner Wrench (Continued)

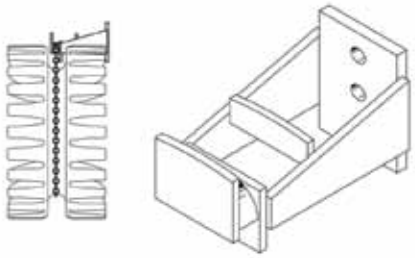
SMCS Code: 4201-010
Model: 143H and 163H Motor Graders with All Wheel Drive
Warranty: Six Months

Square drive	3/4 in
Torque capacity	612 N•m (453 ft-lb)
Inside radius	70.0 mm (2.76 in)
Distance (center of square to center of locknut)	89.0 mm (3.5 in)
Pin diameter	6.35 mm (0.25 in)
Pin part number	1J-2198

Part Number	Description
4C-8155	Locknut Spanner Wrench

143-7145 Lifting Bracket

Model: 65, 75 and 85 Challengers
Warranty: Six Months



European Union compliant, CE marked

- Used to remove and install cast drive wheel
- Used with 12.7 mm (1/2 in) chain and adjustable "C" hook
- Allows drive wheel to be rotated for proper alignment
- Holds drive wheel in an upright position when being moved
- Can also be used in removal and installation of outer front idler

Part Number	Description
143-7145	Lifting Bracket

155-1557 Cast Driver Gauge

Model: All Large Challengers Using Cast Steel Drive Wheels
Warranty: Six Months

- Used to accurately make scraper adjustments
- Built-in handle decreases adjusting time

Reference

SEBU7072-04, Operation and Maintenance Manual

Part Number	Description
155-1557	Cast Driver Gauge

Special Tools for Track-Type Tractors

Special Service Tools for D8, D9, D10, and D11 Track-Type Tractors

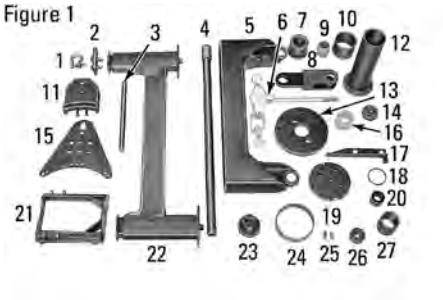
SMCS Code: See Chart for Application
Model: D8, D9, D10 and D11 Tractors
Warranty: Six Months

European Union compliant, CE marked (142-8547, 142-8548, 151-2816)

- Some tools are used on all 3 tractors -- see combined application charts which are followed by photos of the tools (referred to by figure number in the chart)

Special Service Tools for D10 Tractors

- Make D10 service operations easier and safer
- Needed to handle heavier D10 components
- Some tools used on all 3 tractors (see application charts)



Fabricated Tools for Servicing D10 Tractors	
FT1375	Spacer
FT1377	Installer Group
FT1382	Strap
FT1383	Strap
FT1408	Spacer
FT1409	Spacer
FT1664	Stud
FT1713	Wedge Group
FT1714	Wedge Group
FT1715	Sleeve
Special Service Tools for D10 Tractors (without part numbers)	
Item	Description
6	Hoist [capacity of 5P-9694 Hoist: single line — 7.5 kN (1700 lb) double line - 15 kN (3400 lb)]
7	Driver
14	Turning Tool, discontinued
17	Bracket, discontinued
18	Spacer
24	Installer

Special Service Tools for D10 Tractors			
Item	**Part Number**	**Description**	**Qty.**
1	5P-8622	Shackle	--
2	151-2816	Plate	--
2	2H-3745	Bolt	4
3	5P-7273	Stud	--
4	5P-7395	Installer - Axle	--
5	142-8548	Bracket	--
8	139-3328	Tilt Link	--
9	8T-0830	Installer - Seal	--
10	5P-8625	Spacer	--
11	142-1666	Bracket Assembly - Steering Clutch and Final Drive	--
11	1D-4608	Bolt	2
11	7F-4283	Bolt	2

(Continued)

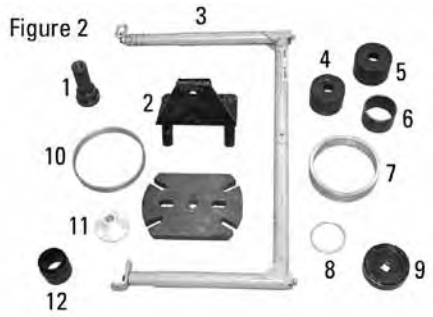
Special Service Tools for D8, D9, D10, and D11 Track-Type Tractors (Continued)

SMCS Code: See Chart for Application
Model: D8, D9, D10 and D11 Tractors
Warranty: Six Months

Special Service Tools for D10 Tractors			
Item	**Part Number**	**Description**	**Qty.**
11	1B-4209	Nut - Full	2
12	5P-8620	Pilot	--
13	5P-7269	Plate	--
15	5P-8732	Adapter	--
16	8T-0826	Installer - Seal	--
19	5P-8624	Plate	--
20	5P-8725	Guide - Seal	--
21	142-8547	Bracket As - Lifting	--
21	139-2782	Transmission Bracket Assembly	--
22[1]	142-6893	Adjustable Hook Assembly	--
22	142-1664	Adjustable Lifting Bracket Group	--
23	5P-8638	Wrench	--
25	5P-8673	Tip	--
26	5P-7274	Nut	--
27	5P-7270	Sleeve	--

[1] Use 142-6893 Adjustable Hook Assembly or 142-1664 Lifting Bracket Group (see chart for application)

Special Service Tools for D9L and D9R Tractors



- Make service operations easier and safer
- Some tools used on all 3 tractors (see application charts)

Special Service Tools for D9L and D9R Tractors (without part numbers)	
Item	Description
2	Adpater
11	No longer available

Item	**Part Number**	**Description**
1	6V-3187	Adapter
3	6V-2082	Hook Group
4	6V-2098	Sleeve
5	6V-2097	Receiving Sleeve
6	6V-2108	Receiving Sleeve
7	6V-3028	Spacer
7	140-2286	Spacer
8	6V-2109	Spacer (D9R)
9	6V-3158	Wrench
10	6V-3048	Installer
12	8T-0829	Installer - Seal
13	6V-2168	Plate

Fabricated Tools

Fabricated Tools		
Item	Part No.	Description
14	FT1534	Prop
15	FT1552	Strap (4)
16	FT1557	Compressor
17	FT1548	Stud
17	FT1577	Guide Pin

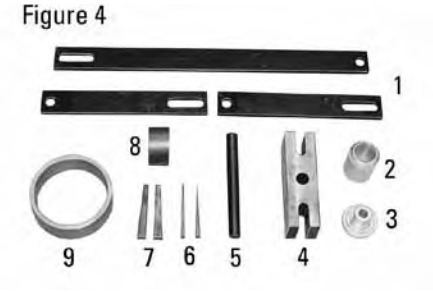
Figure 3

Special Service Tools for D8L Tractors

- Make D8L service operations easier and safer
- Some tools used on all 3 tractors (see application charts)

Item	Part No.	Description
1	FT1651	Strap Group
3		No longer available
5	FT1664	Stud
6	FT1713	Wedge Group
7	FT1714	Wedge Group
8	FT1645	Spacer

Figure 4



Item	**Part Number**	**Description**
2	8T-0828	Installer
4	6V-4871	Reaction Bar
9	6V-4951	Spacer

Combined Application Chart for D11, D10, D9 and D8 Service Tools

Service Tools (without part numbers)					
Fig. No.	Description	D10	D9L	D8L	Tool Usage
1	Driver	X			Remove and Install Equalizer Bar
1	Bracket (discontinued)	X			R I Torque Divider
1	Spacer	X			Bogie Cartridge Installation
1	Installer	X			Final Drive Bearing Installation
2	Adapter		X	X	R & I of Planetary Transmission

Combined Application Chart for D11, D10, D9 and D8 Service Tools							
Fig. No.	**Part Number**	**Description**	**D11**	**D10**	**D9L**	**D8L**	**Tool Usage**
1	142-1673	Plate - Press	X	--	--	--	Remove Final Drive Hub from Final Drive
1	129-3254	Wrench	X (D11N)	--	--	--	R & I Bevel Gear Shaft Bearing Adjusting Nut
1	129-3253	Wrench	--	X (D10R)	--	--	R & I Bevel Gear Shaft Bearing Adjusting Nut
1	139-2782	Transmission Bracket Assembly	X (D11R)	--	--	--	R & I Transmission

(Continued)

Combined Application Chart for D11, D10, D9 and D8 Service Tools (Continued)

Combined Application Chart for D11, D10, D9 and D8 Service Tools							
Fig. No.	**Part Number**	**Description**	**D11**	**D10**	**D9L**	**D8L**	**Tool Usage**
1	142-8547	Bracket As - Lifting	--	X	--	--	R & I Transmission
1	5P-8638	Wrench	--	X	--	--	R & I Bevel Gear Shaft Bearing Adjusting Nut
1	8T-0830	Installer - Seal	--	X	X	--	Install D9L Idler and D10 Roller Seals
1	8T-0826	Installer - Seal	--	X	--	--	Install Idler Duo-Cone Seal
1	5P-9694	Hoist - Rachet	--	X	X	--	Remove and Install Torque Divider
1	5P-8732	Adapter	--	X	X	X	R & I Final Drive Planet Carriers, Hub and Ring Gear
1	5P-8725	Guide - Seal	--	X	--	--	Install Bulldozer Lift Cylinder Head Seal
1[1]	5P-8673	Tip	--	X	X	--	Remove Transfer Gear Bearing Retainer Ring
1[2]	5P-8668	Turning Tool	--	X	--	--	Rotate Engine for In-Chassis Timing
1	5P-8625	Spacer	--	X	--	--	Remove Transfer Gear Bearing
1	5P-8624	Plate	--	X	X	--	Assemble Roller Frame; R & I Equalizer Bar
1	5P-8622	Shackle	--	X	X	X	Use with Lifting Hook (see chart)
1	5P-8620	Pilot	--	X	X	X	Pivot Shaft Installation: Recoil Spring R & I
1	139-3328	Tilt Link	X (D11R)	X (D10R)	--	--	Support Radiator Guard during Engine R & I
1	142-1664	Adjustable Lifting Bracket Group	X	X	--	--	R & I Transmission or Steering Clutch and Final Drive
1	142-1666	Bracket Assembly - Steering Clutch and Final Drive	--	X	X	X	Use with Lifting Hook (see chart for R & I of Final Drive Module)
1	142-6893	Adjustable Hook Assembly	--	--	X	X	R & I Transmission or Steering Clutch and Final Drive
1	142-8548	Bracket	X	X	X	X	Remove and Install Roller Frames
1	151-2816	Plate	--	X	X	X	Use with Lifting Hook (see chart)
1	5P-7269	Plate	--	X	--	--	D & A Recoil Spring, Equalizer Bar, Roller Frames
1	5P-7270	Sleeve	--	X	X	--	R & I Bogie Cartridge Pin Assemblies
1	5P-7273	Stud	--	X	X	--	D & A Recoil Spring; R & I Bogie Cartridge Pins
1	5P-7274	Nut	--	X	X	--	R & I Bogie Cartridge Pin Assemblies
1	5P-7395	Installer - Axle	--	X	X	X	Install Final Drive Axles
2	6V-3048	Installer	--	--	X	--	Installation of Pivot Shaft Seal
2	6V-2082	Hook Group	--	--	X	X	R & I of Valves from Manhole

(Continued)

Combined Application Chart for D11, D10, D9 and D8 Service Tools (Continued)

Combined Application Chart for D11, D10, D9 and D8 Service Tools							
Fig. No.	**Part Number**	**Description**	**D11**	**D10**	**D9L**	**D8L**	**Tool Usage**
2	6V-2098	Sleeve	--	--	X	X	Installation of Equalizer Bar End Bearing
2	6V-2109	Spacer (D9R)	--	--	X	--	Installation of Minor Bogie Cartridge
2	8T-7688	Spacer	--	X	--	--	Installation of Final Drive Outer Bearing
2	140-2286	Spacer	--	--	X (D9R)	--	Installation of Final Drive Outer Bearing
2	6V-2108	Receiving Sleeve	--	--	X	X	Removal of Bogie Cartridge
2	6V-3187	Adapter	--	--	X	--	Removal of Equalizer Bar Center Pin
2	6V-2168	Plate	--	--	X	X	R & I of Recoil Spring
2	8T-0829	Installer - Seal	--	--	X	X	Install D8L Idler and D9L Roller Seals
2	6V-3158	Wrench	--	--	X	X	R & I of Bevel Gear Shaft Nut
2	6V-3028	Spacer	--	--	X	--	Installation of Final Drive Outer Bearing
2	6V-2097	Receiving Sleeve	--	--	X	--	Removal of Equalizer Bar End Bearing
4	6V-4951	Spacer	--	--	--	X	Installation of Final Drive
4	142-1670	Bearing Spacer	X (D11R)	--	--	--	Outer Bearing
4	6V-4871	Reaction Bar	--	--	X	--	Removal of Equalizer Bar Center Pin
4	8T-0828	Installer	--	X	X	--	Installation of Track Roller Seal

[1] Qty. 2
[2] Discontinued

Combined Application Chart for D10, D9L and D8L Fabricated Tools

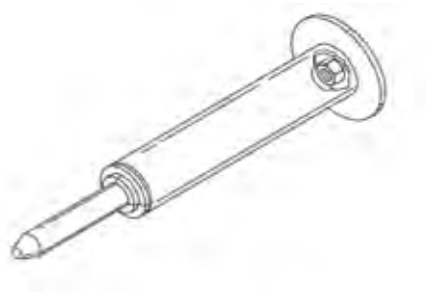
Combined Application Chart for D10, D9L and D8L Fabricated Tools							
Refer to Tool Number Index for more information on D10 tools which are not illustrated in this section.							
Fig. No.	Part No.	Description	D10	D9L	D8L	Qty.	Tool Usage
	FT1375	Spacer	X			5	D A Recoil Spring; D A Equalizer Bar
	FT1377	Installer Group	X			2	Radiator Core Installation
	FT1382	Strap	X			4	Support Bogies for Roller Frame R I
	FT1383	Strap	X			2	Support Bogies for Roller Frame R I
	FT1408	Spacer	X			4	Equalizer Bar End Pin Installation
	FT1409	Spacer	X			8	Equalizer Bar End Pin Installation; Roller Frame R & I
	FT1715	Sleeve	X			1	Remove Center Pin in Equalizer Bar
3	FT1534	Prop		X		1	Tilt Radiator Guard
3	FT1552	Strap		X		4	Support Bogies; R & I of Track Roller Frame
3	FT1557	Compressor		X		1	Installation of End Bearing Snap Ring for Equalizer Bar
3	FT1548	Stud		X		1	Removal of Equalizer Bar Center Pin
3	FT1577	Guide Pin		X		1	Installation of Track Pins
4	FT1664	Stud	X		X	1	Remove Center Pin in Equalizer Bar
4	FT1713	Wedge Group	X		X	2	Remove Bogie Cartridge
4	FT1714	Wedge Group	X			2	Remove Center Pin in Equalizer Bar
4	FT1645	Spacer			X	1	Removal of Radiator Ground Pin
4	Ft1651	Strap Group			X	1	Support Roller Frame Bogies

Recoil Spring Compressor

SMCS Code: 4185-017, 0729
Model: D8R Track-Type Tractor
Warranty: Six Months

- Used to align components of recoil spring group to ensure correct spring location
- Used with other available tools to compress recoil spring
- Pilot has 2 diameter sizes to accommodate both recoil spring groups used on D8R Tractor
- Makes removal and installation of spring groups easier and safer

Reference
SENR8327, Disassembly and Assembly, D8R Tractor Power Train



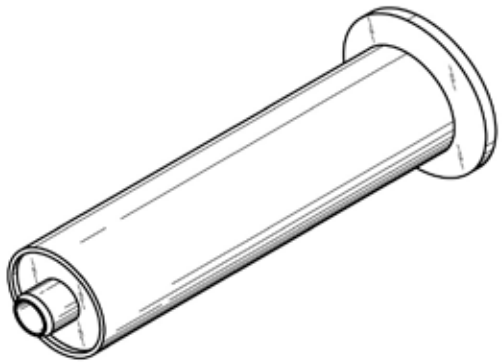
Part No.	Description	Overall Length	Pilot Pin Length	Diameter (plate)	Diameter (pilot)	Material
133-9872	Pilot Assembly	830.7 mm (32.7 in)	285 mm (11.2 in)	224.0 mm (8.8 in)	50 mm (2 in)	Steel

FT2649 Recoil Pilot

SMCS Code: 4185-017, 0729
Model: 583R Track-Type Tractor
Warranty: None

- Used to make removal and installation of undercarriage recoil springs easier and safer
- Used with other recoil spring removal tools specified in Service Manual
- Designed specifically for 583R

Reference
SENR1811, Service Manual, Disassembly and Assembly, 583R Tractor Power Train

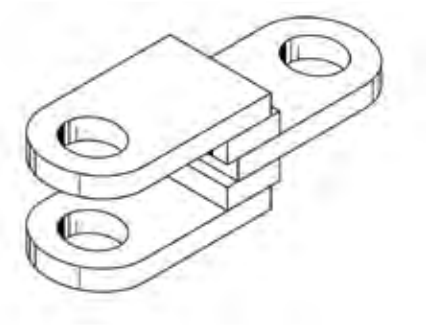


Assembly drawing		
Item	Description	Material
1	Large End Plate	A36 steel
2	Pilot End Plate	A36 steel
3	Pilot Tube	SAE 1026 steel
4	Main Body Tube	SAE 1026 steel

139-3328 Tilt Link

SMCS Code: 1381-084
Model: D10R Track-Type Tractor
Warranty: Six Months

- Used to hold radiator guard in the forward (tilt) position
- Stops radiator guard from moving while working in or around engine compartment
- Easily mounts to existing holes using both lower radiator guard pins



Length	447.0 mm (17.6 in)
Width	127 mm (5 in)
Height	127 mm (5 in)
Plate thickness	25.4 mm (1.0 in)
Material	steel

(Continued)

139-3328 Tilt Link (Continued)

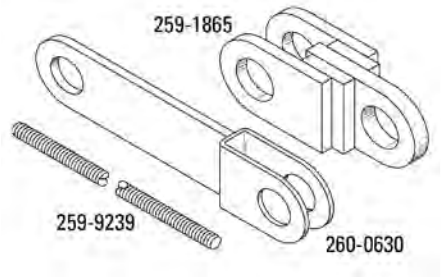
SMCS Code: 1381-084
Model: D10R Track-Type Tractor
Warranty: Six Months

Part No.	Description	Length	Width	Height	Plate Thickness	Material
139-3328	Tilt Link	447.0 mm (17.6 in)	127 mm (5 in)	127 mm (5 in)	25.4 mm (1.0 in)	Steel

Radiator Service Tools

Essential Tool

SMCS Code: 1381-084
Model: D8T, D9T, D10T Track-Type Tractors
Warranty: Six Months



259-1865 Tilt Link

- Used on D9T Track-Type Tractor
- Used to hold radiator guard in forward (tilt) position
- Stops radiator guard from moving while working in or around engine compartment
- Easily mounts to existing holes using both lower radiator guard pins
- Steel tilt link measures 177.8 mm (7.0 in) on center between pin holes

259-9239 Threaded Rod

- Used on D10T Track-Type Tractor
- Used to remove radiator guard tilt pin
- Used with puller sleeve and hydraulic cylinder
- Grade 8 threaded rod (M20 x 2.5) is 1.0 m (39.4 in) long

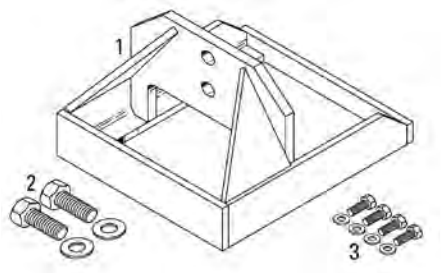
260-0630 Tilt Link

- Used on D8T Track-Type Tractor
- Used to hold radiator guard in forward (tilt) position
- Stops radiator guard from moving while working in or around engine compartment
- Easily mounts to existing holes using both lower radiator guard pins
- Steel tilt link measures 438.5 mm (17.25 in) on center between pin holes

Part Number	Description
259-1865	Tilt Link
259-9239	Stud
260-0630	Tilt Link

139-2782 Transmission Bracket Assembly

SMCS Code: 3150-011, 3150-012
Model: D11R and Carrydozer
Warranty: Six Months



European Union compliant, CE marked

- Used to remove transmission assembly from machine without any unnecessary disassembly; keeps transmission level during removal and installation
- Used with an adjustable 142-1664 Lifting Bracket Group
- Designed to bolt to top of transmission over controller assembly
- Overall size (L x W x H): 457.0 x 397.0 x 292.0 mm (18.0 x 15.6 x 11.5 in)

Item	Part Number	Description
1	139-2782	Transmission Bracket Assembly
2	2H-3745	Bolt
2	5P-8250	Hard Washer

(Continued)

139-2782 Transmission Bracket Assembly (Continued)

SMCS Code: 3150-011, 3150-012
Model: D11R and Carrydozer
Warranty: Six Months

Item	Part Number	Description
3	0S-1566	Bolt
3	5P-8247	Hard Washer

Service Tools for D7H Tractors

SMCS Code: See Chart for Application
Model: D7H
Warranty: Six Months

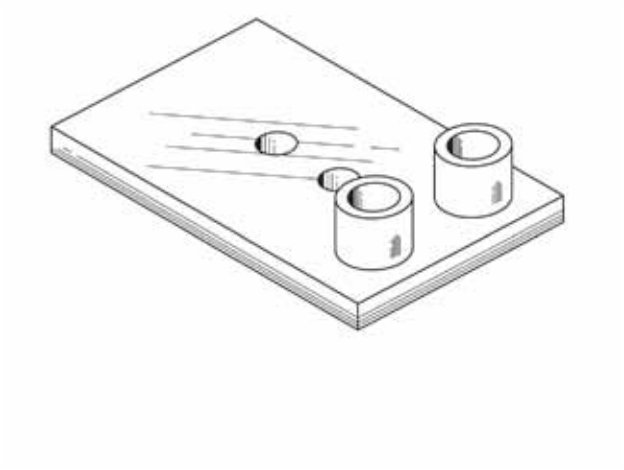
- Many have multiple applications; will also be used to service other models
- Some fabricated tools include a component that has a regular Cat® part number that is identified in FT drawing
- In addition to tools illustrated, dealers should order 8T-5071 Seal Guard to protect recoil seal while removing or installing front roller frame into rear frame

Part No.	Description	Tool Usage
FT1978	Gauge Bar	Direct drive transmission pinion adjustment
FT1897	Adapter	Remove and install bevel gear and transmission module
FT1934	Beam	Final drive outboard bearing removal
FT1952	Installer	Use with 1U-7432 Adapter to remove and install axle
	Adapter Group	Use with FT1845 Brake Release Group for towing
FT1976	Starter Group	Recoil seal installation

Part Number	Description	Tool Usage
8T-3207	Lift Bracket	Remove and install final drive and steering clutch module
5P-8622	Shackle	Use with 8T-3207 Lift Bracket
8T-3053	Installer	Pivot Shaft Seal installation
187-0407	Adapter	Remove and install transmission (Use with 142-6893 Adjustable Hook Assembly
8T-0939	Installer - Seal	Duo-Cone seal installation (track rollers and idlers)
8T-0822	Sleeve - Align	Duo-Cone seal installation (track rollers and idlers)
8T-2827	Spacer	Final Drive outboard bearing installation
1U-9397	Driver	Recoil and/or pivot shaft seal installation
8T-2838	Spanner	Remove and install direct drive bevel gear shaft nut (4H-6507)
8T-2839	Spanner	Remove and install power shift bevel gear shaft nut (1L-6957)

FT2801 Adapter Plate Assembly
Essential Tool

SMCS Code: 4050-010
Model: D3C and D3G Track-Type Tractor; 939C Wheel Loader
Warranty: None

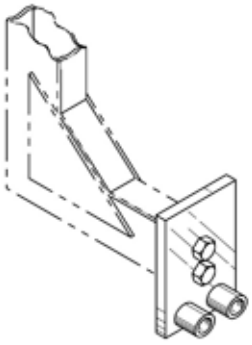


- Used to remove and install final drive
- Used with 8T-3207 Lifting Bracket and 9S-1362 Bolts
- Bolts directly to lift bracket
- Plate: SAE 1020 Steel
- Spacer tube: SAE 1026 Steel

Reference
RENR5569, Powertrain Disassembly and Assembly

FT2813 Adapter Plate Assembly

SMCS Code: 4050-010
Model: D3G and D4G Track-Type Tractor
Warranty: None



- Used to remove and install final drive
- Used with 8T-3207 Lift Bracket
- Bolts directly to lift bracket using two 9S-1362 Bolts
- Plate: SAE 1020 Steel
- Spacer tube: SAE 1026 Steel

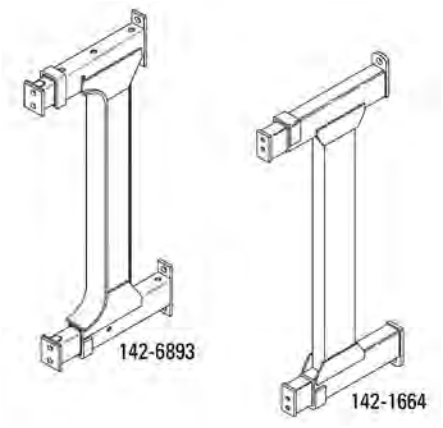
Reference
RENR5569, Powertrain Disassembly and Assembly

142-6893 Adjustable Hook Assembly
142-1664 Adjustable Lifting Bracket Group

SMCS Code: 3002-10, 3030-10, 4050-010, 4100-10
Model: Track-Type Tractors
Warranty: Six Months

European Union compliant, CE marked

- Used to aid in removal and installation of large assemblies
- Adjustable arms make balancing assemblies with different centers of gravity much easier
- Unit can be positioned with either arm in the upright position
- Distance between upper and lower arms provides clearance around fenders, fuel tanks, or other items blocking a straight lift
- Can be used to lift final driver, steering clutch and brake, and transmission
- Can not be used to lift track roller frames (CE Compliant 142-8548 Non Adjustable Lifting Bracket is available for this)
- 142-1664 Adjustable Lifting Bracket Group includes 142-2857 Trunnion Pin and 142-2858 Threaded Rod



	142-1664	142-6893
Overall height	257.0 cm (101.2 in)	183.3 cm (72.1 in)
Operating range from vertical beam to tip of Upper arm	252.0-610.0 mm (9.92-24.0 in)	302.2-581.2 mm (11.9-22.9 in)
Operating range from vertical beam to tip of Lower arm	100.0-458.0 mm (3.9-18.0 in)	163.2-442.2 mm (6.4-17.4 in)
Weight	200 kg (440 lb)	(230 lb)
Lifting capacity with either arm fully extended	2724 kg (6000 lb)	1816 kg (4,000 lb)
Lifting capacity with both arms fully retracted	5448 kg (12,000 lb)	4550 kg (10,000 lb)
Distance between upper and lower arms	200.0 cm (78.75 in)	139.0 cm (54.7 in)

Part Number	Description
142-1664	Adjustable Lifting Bracket Group
142-6893	Adjustable Hook Assembly

Special Service Tools for Series “N” and D9R Track-Type Tractors

SMCS Code: See Chart for Application
Model: Series “N” and D9R Track-Type Tractor
Warranty: Six Months

- Required to service Series N and D9R Track-Type Tractor power trains
- Several tools (footnote 1) are much-improved replacements for former Duo-Cone seal installers; new installer assemblies provide more reliable seal installation; they hold both steel ring and rubber toric in better relation to each other and position seal group at correct bore depth; installer assemblies replace discontinued tools
  1U-6437 Installer Assembly replaces discontinued 8M-9395
  1U-5934 Installer Assembly replaces discontinued 8M-7913
  8T-7789 Installer Assembly replaces discontinued 1S-4320

(Continued)

Special Service Tools for Series "N" and D9R Track-Type Tractors (Continued)

SMCS Code: See Chart for Application
Model: Series "N" and D9R Track-Type Tractor
Warranty: Six Months

Special Service Tools For Series "N" and D9R Track-Type Tractors						
Tool Name	D8N	D9N	D9R	D10N	D11N	Service or Repair Operation
Installer						Install Track Seals
Link				FT2235		Tilt Radiator Guard
Pump Group	FT1845	FT1845	FT1845	FT1845	FT1845	Release Brakes For Towing
Adapter Group						Release Brakes For Towing
Strap Group	FT2213	FT2223	FT2223	FT2239	1U-9396	Support Roller Bogies
Adapter Assembly	FT2214					Adjust Bevel Pinion Bearing
Compressor	FT2201					Service Counterbalance Valve
Hydraulic Torque Wrench						Install Track Bolts
Seal Driver						Piston Pump Repair

Special Service Tools For Series "N" and D9R Track-Type Tractors						
Tool Name	**D8N**	**D9N**	**D9R**	**D10N**	**D11N**	**Service/Repair Operation**
Seal Guide	1U-5444	--	--	--	--	Piston Pump Repair
Bearing Puller	1U-5449	--	--	--	--	Piston Pump Repair
Puller Jaws	1U-5452	--	--	--	--	Piston Pump Repair
Seal Starter	1U-5753	1U-5753	1U-5753	1U-5753	1U-5753	Install Recoil Spring Bearing
Installer Assembly	1U-6437	1U-5934	1U-5934	1U-5934	8T-7789	Install Final Drive Seals [1]
Adapter [2]	1U-7432	--	--	--	--	Shift Differential Steer Planetary
Driver	1U-9397	1U-9397	1U-9397	1U-9397	1U-9397	Install Recoil Bearing Seal
Sleeve - Align	8T-0822	8T-0822	8T-0822	8T-0823	8T-0824	Install Roller Seals
Alignment Sleeve	8T-0823	8T-0823	8T-0823	8T-0824	8T-0825	Install Idler Seals
Installer	8T-0828	8T-7641	8T-7641	8T-0829	8T-0827	Install Roller Seals
Installer - Seal	8T-0829	8T-7640	8T-7640	8T-0830	--	Install Idler Seals
Spacer	8T-2827	6V-4951	140-2286	8T-7688	8T-7688	Install Final Drive Bearings

(Continued)

Special Service Tools for Series "N" and D9R Track-Type Tractors (Continued)

SMCS Code: See Chart for Application
Model: Series "N" and D9R Track-Type Tractor
Warranty: Six Months

Special Service Tools For Series "N" and D9R Track-Type Tractors						
Tool Name	**D8N**	**D9N**	**D9R**	**D10N**	**D11N**	**Service/Repair Operation**
Seal Driver	8T-9144	--	--	--	--	Hydraulic Motor Repair
Seal Driver	8T-9148	--	--	--	--	Install Cover Seal
Piston Ring Guide	8T-9151	--	--	--	--	Install piston Rings
Seal Guide	8T-9159	--	--	--	--	Install Shaft Seal

[1] Replacements of existing Duo-Cone seal installers
[2] May use FT2052 Adapter

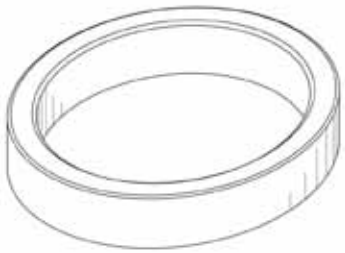
273-9373 Spacer

Essential Tool

SMCS Code: 4050
Model: 517 and 527 Track-Type Skidders and D5H Track-Type Tractors
Warranty: Six Months

Part Number	Description
273-9373	Spacer

- Used to quickly and consistently seat 8T-0072 Bearing to correct depth
- Used on 132-5536, 196-1865, and 233-9595 Final Drive Assembly
- Ensures correct bearing assembly



FT3144 Seal Installer

SMCS Code: 4151-016
Model: D7E Track-Type Tractor (electric drive)
Warranty: None

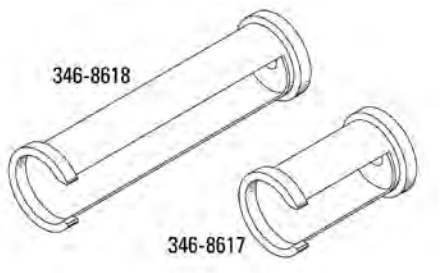
- Used to install scraper seal in head assembly of recoil cylinder
- Correctly installs scraper seal without damage to seal or recoil cylinder head assembly
- Make from SAE1018 steel

Reference

KENR5162, D7E Track-Type Tractor Power Train, Disassembly and Assembly, Recoil Cylinder - Assemble

Sleeve Assemblies
Essential Tool

SMCS Code: 6313, 5354-011
Model: D7E Track-Type Tractor (electric drive)
Warranty: Six Months



- Used to remove linkage pins from ripper attachment on D7E Track-Type Tractor

346-8617 Sleeve Assembly

- Used with 6V-3175 Hydraulic Cylinder, 9U-5344 Puller Stud, 9U-5346 Fast Runner Nut, and a suitable hydraulic power supply to remove 270-0598 Linkage Pins (interior)
- 9U-5344 Puller Stud (M30) must be cut from original length of 80 cm (31.5 in) to 69 cm (27.2 in)

346-8618 Sleeve Assembly

- Used with 6V-3175 Hydraulic Cylinder, 137-8460 Puller Stud, 9U-5346 Fast Runner Nut, and a suitable hydraulic power supply to remove 270-0597 Linkage Pins (exterior)
- 137-8460 Puller Stud (M30) can be used as is, or may be shortened from 198 cm (77.95 in) long to a minimum length of 100 cm (39.4 in)

Reference

KENR5166, Machine System, Disassembly and Assembly

Required Tooling	
Description	Qty.
Hydraulic Power Supply w/hose	1

Part No.	Description	Length	Diameter	Side Opening	Weight	Qty.
346-8617	--	261.3 mm (10.29 in)	177.8 mm (7 in)	100 mm x 220.4 mm (4.0 x 8.7 in)	14.3 kg (31.53 lb)	--
346-8618	--	522.6 mm (20.57 in)	177.8 mm (7 in)	100 mm x 481.7 mm (4.0 x 19.0 in)	23.9 kg (52.69 lb)	--
346-8617 Sleeve Assembly[1]						
9U-5344	Puller Stud, M30 x 800 mm (31.5 in)[2]	800 mm (31.50 in)	--	--	--	1
9U-5346	Fast Runner Nut, M30	--	--	--	--	1
346-8618 Sleeve Assembly[1]						
137-8460	Puller Stud, M30 x 1980 mm (77.9 in)[3]	1,980 mm (77.95 in)	--	--	--	1
9U-5346	Fast Runner Nut, M30	--	--	--	--	1

[1] Required Tooling
[2] Must be cut to 690 mm (27.2 in) long for interior linkage pin removal.
[3] May be used as is, or cut to a minimum length of 1000mm (39.4 in) for exterior linkage pin removal.

FT3152 Shaft Tester Plate

SMCS Code: 1404-034
Model: D7E Track-Type tractor
Warranty: None

- Used to pressure test generator assembly for leaks during assembly procedure
- Attaches to rotor assembly for leak test
- Allows use of pressure air 103 kPa (15 PSI) to test generator for leaks
- Drop in air pressure indicates a leak
- Made from SAE6061 Aluminum Alloy

Reference

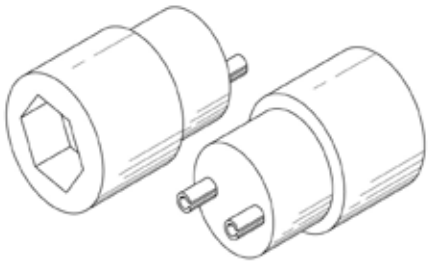
KENR5162, D7E Track-Type Tractor, Power Train, Disassembly and Assembly

Part Number	Description	Qty.
Required Hardware		
5P-8998	Nipple - Pipe	2
006-0210	Pipe Tee	1
224-1228	Ball Valve	1
4C-7158	Fitting	1
214-0787	Pressure Gauge	1

Service Tools for Wheel-Type Excavators

246-9300 Pin Socket
Essential Tool

SMCS Code: 5453-017
Model: M300C Series Excavators
Warranty: Six Months



- Used to easily remove and install 214-3403 Check Valve from combination valve
- Used with a 5/16 inch Allen socket

Part Number	Description
246-9300	Pin Socket

Service Tools for 206, 212, 214 and 224 Wheel-Type Excavators

SMCS Code: 3000-017
Model: 206, 212, 214 and 224 Wheel-Type Excavators
Warranty: Six Months

- Required to service drive train components (final drives, differentials, transmission and transfer gear, and steering)
- Originally available as non-serviceable items in 8T-3202, 8T-3203 and 8T-3204 Tool Groups (first announced in January 1986 Tool Announcement SENS6865, Power Train Tools Section); groups discontinued but all 60 tools available individually
- Charts identify each tool by both Cat® and supplier part numbers along with service manual pages and illustrations which reference use of each tool; it is recommended that dealer personnel enter both Cat and supplier part numbers in service manuals; some tools listed on more than 1 chart
- Only supplier part number stamped on each tool

Service Tools for Disassembly and Assembly of 206/212 Differential			
Item	Description	Supplier Part No.	Service Manual Form HENR4057, Page No.-Illus. No.
12	Thrust Ring	5870-345-056	21-55
13	Pressure Piece	5870-100-009	16-35, 17-38

Service Tools For Disassembly and Assembly of 206/212 Differential				
Item	**Cat Part No.**	**Description**	**Supplier Part No.**	**Service Manual Form HENR4057, Page No.-Illus. No.**
1	8T-0979	Basic Set	5870-026-000	16-35, 17-38, 19-46
2	1U-5816	Grab Sleeve	5870-026-001	19-46
3	8T-0980	Grab Sleeve	5870-026-017	16-35, 17-38
4	1U-5828	Measuring Ring	5870-340-020	22-58
5	8T-0984	Spanner Wrench	5870-240-025	18-43, 23-90, 24-65
6	1U-5824	Centering Ring	5870-200-042	28-79
7	8T-0976	Measuring Cover Group	5870-200-034	28-79
8	8T-0985	Measure Cylinder	5870-200-037	20-50
9	8T-0975	Handle	5870-260-002	28-78, 30-86

(Continued)

Service Tools for 206, 212, 214 and 224 Wheel-Type Excavators (Continued)

SMCS Code: 3000-017
Model: 206, 212, 214 and 224 Wheel-Type Excavators
Warranty: Six Months

Service Tools For Disassembly and Assembly of 206/212 Differential				
Item	**Cat Part No.**	**Description**	**Supplier Part No.**	**Service Manual Form HENR4057, Page No.-Illus. No.**
10	1U-5823	Driver	5870-058-061	28-78, 30-86
11	8T-0986	Inserter Group	5870-345-049	21-55
14	1U-5826	Guide Bolt	5870-204-021	18-41

Service Tools for Disassembly and Assembly of 206/212 Final Drive

Service Tools for Disassembly and Assembly of 206/212 Final Drive			
Item	Description	Supplier Part No.	Service Manual Form HENR4057, Page No.-Illus. No.
2	Spring Hook	5870-281-029	13-17, 38-114, 86-16, 99-66
4	Grab Sleeve	5870-029-005	14-28, 88-23
13	Pry Bar	5870-345-036	12-14, 15-30, 86-13
14	Pressure Piece	5870-100-019	14-26 and 28, 88-21 and 23

Item	**Cat Part No.**	**Description**	**Supplier Part Number**	**Service Manual, Form HENR4057, Page No.-Illus. No.**
1	1U-5832	Pry Bar	5870-400-001	13-18, 87-18
3	8T-0995	Spanner	5870-655-004	94-46
5	1U-5838	Centering Disc	5870-912-001	11-11, 12-13, 39-118 and 120, 85-11, 100-70
6	1U-5839	Two Leg Puller	5870-970-002	10-5, 84-5
7	8T-0991	Sleeve Driver Group	5870-048-101	33-95, 95-49
8[1]	1U-5820	Driver	5870-055-090	91-33 and 34, 92-39
9	8T-0975	Handle	5870-260-002	28-78, 91-33 and 34, 92-39
10	1U-5833	Hook Spanner	5870-401-085	11-11, 12-13, 35-103, 39-118 and 120, 85-11, 96-54, 100-70
11	8T-0993	Driver	5870-051-013	36-106, 97-57
12	8T-0994	Handle	5870-260-004	36-106, 97-57

[1] Only required for front axle final drive

Service Tools for Disassembly and Assembly of 206/212 Steering

Service Tools for Disassembly and Assembly of 206/212 Steering			
Item	Description	Supplier Part No.	Service Manual Form HENR4057, Page No.-Illus. No.
1	Drift	5870-345-051	108-7, 114-32
2	Installer	5870-345-057	108-7, 114-32

(Continued)

Service Tools for Disassembly and Assembly of 206/212 Steering (Continued)

Service Tools for Disassembly and Assembly of 206/212 Steering				
Item	**Cat Part No.**	**Description**	**Supplier Part Number**	**Service Manual, Form HENR4057, Page No.-Illus. No.**
3	1U-5836	Installer	5870-651-032	115-34

Service Tools for Disassembly and Assembly of 206/212 Transmission

Service Tools for Disassembly and Assembly of 206/212 Transmission			
Item	Description	Supplier Part No.	Service Manual Form HENR4057, Page No.-Illus. No.
5	Driver	5870-055-011	70-100
6	Guide Bolt	5870-204-007	45-45, 6-48, 63-76, 82-147
8	Driver	5870-058-060	62-70
9	Centering Disk	5870-901-011	49-70, 73-115
11	Driver	5870-057-020	62-69
15	Assembly Jig	5870-345-047	53-33, 67-92
16	Pry Bar	5870-345-036	48-13

Item	**Cat Part No.**	**Description**	**Supplier Part Number**	**Service Manual, Form HENR4057, Page No.-Illus. No.**
1	8T-0984	Spanner Wrench	5870-240-025	58-54, 61-68
2	1U-5832	Pry Bar	5870-400-001	53-34
3	1U-5834	Pressing Sleeve	5870-506-044	65-84
4	8T-0975	Handle	5870-260-002	62-69 and 70, 70-100
7	1U-5826	Guide Bolt	5870-204-021	47-23, 57-51, 62-71, 77-130
10	1U-5818	Driver	5870-048-085	80-141
12	1U-5829	Assembly Jig	5870-345-028	49-20, 73-15
13	1U-5839	Two Leg Puller	5870-970-002	59-17, 52-30
14	1U-5835	Profile Sleeve	5870-512-006	76-127

Service Tools for Disassembly and Assembly of 214/224 Differential

Service Tools for Disassembly and Assembly of 214/224 Differential			
Item	Description	Supplier Part No.	Service Manual Form HENR3095, Page No.-Illus. No.
1	Spacer	5870-500-004	126-31
2	Spacer	5870-500-003	126-31
3	Adapter Group	5870-500-023	109-14
8	Pressure Piece	5870-100-009	119-8
11	Pressure Piece Group	5870-506-058	106-4, 114-30
14	Pry Bar	5870-345-036	108-11

(Continued)

Service Tools for Disassembly and Assembly of 214/224 Differential (Continued)

Item	Cat Part No.	Description	Supplier Part Number	Service Manual, Form HENR3095, Page No.-Illus. No.
4	8T-0984	Spanner Wrench	5870-240-025	108-9, 112-23
5	1U-5847	Measuring Shaft	5870-500-001	109-14, 126-31
6	1U-5840	Grab Sleeve	5870-026-008	106-4, 119-8
7	8T-0504	Basic Set	5870-026-100	106-4, 119-8
9	8T-0979	Basic Set	5870-026-000	109-13
10	1U-5816	Grab Sleeve	5870-026-001	109-13
12	8T-0988	Driver	5870-055-016	111-21
13	8T-0975	Handle	5870-260-002	111-21

Service Tools for Disassembly and Assembly of 214/224 Final Drive

Service Tools for Disassembly and Assembly of 214/224 Final Drive			
Item	Description	Supplier Part No.	Service Manual Form HENR4057, Page No.-Illus. No.
8	Pin Spanner Group	5870-656-005	87-7, 100-60
9	Slide Hammer	5870-650-001	138-75
10	Pry Bar	5870-345-036	88-10, 90-18, 91-24

Item	Cat Part No.	Description	Supplier Part Number	Service Manual, Form HENR3095, Page No.-Illus. No.
1	1U-5844	Driver	5870-055-073	141-86 and 87
2	1U-5843	Driver	5870-055-036	99-53
3	8T-0514	Guide Bolt	5870-204-023	116-36, 96-41
4	8T-0975	Handle	5870-260-002	92-26 and 27, 93-29 and 30, 95-39 and 40, 99-53 and 54, 141-86 and 87
5	1U-5845	Driver	5870-058-026	92-27
6	1U-5842	Driver	5870-055-006	92-29 and 30, 95-39 and 40
7	8T-0995	Spanner	5870-655-004	94-35, 137-72

Service Tools for Disassembly and Assembly of 214/224 Transmission

Service Tools for Disassembly and Assembly of 214/224 Transmission			
Item	Description	Supplier Part No.	Service Manual Form HENR4057, Page No.-Illus. No.
5	Installer	5870-651-028	124-25

(Continued)

Service Tools for Disassembly and Assembly of 214/224 Transmission (Continued)

Item	Cat Part No.	Description	Supplier Part Number	Service Manual, Form HENR3095, Page No.-Illus. No.
1	1U-5841	Grab Sleeve	5870-026-021	121-14
2	8T-0504	Basic Set	5870-026-100	121-14
3	8T-0980	Grab Sleeve	5870-026-017	121-14
4	1U-5852	Guide	5870-651-027	124-23

Service Tools for 213B and 214B Excavators

SMCS Code: 4000-017
Model: 213B and 214B Excavators
Warranty: Six Months

- Used mainly for disassembly and assembly of power train components
- Facilitate service support because they are very efficient for disassembly and assembly/remove and install operations
- All are applicable to 214B Excavator; 4C-4767 Spanner Wrench is the only tool that is also applicable to 213B Excavator

References

The following Service Manuals provide instructions for the use of these tools as well as a complete list of all tooling, fittings and testing procedures. Make changes to the manuals as indicated.
SENR3794 , 213B Vehicle Systems Disassembly and Assembly - change “C” in chart on page 69 from 1U-9702 to 1U-5839 Puller
SENR3796, 214B Vehicle Systems Disassembly and Assembly - change “C” in chart on page 64 from 1U-9702 to 1U-5839 Puller
SENR4315, 214B Power Train Disassembly and Assembly
Change “E” in chart on page 37 from 1U-9702 to 1U-5839 Puller
Tool charts on pages 14 and 32 incorrectly indicate that 4C-4061 Centering Plate can be substituted for 4C-4059 Plate Group
Add 4C-4061 Centering Plate (used with 4C-4058 Wrench) to column B of tool chart on page 37 (see accompanying illustration for step 32 on page 41
Change 4C-4055 to 4C-4655 Seal Driver in tool chart on page 37
Change 4C-4057 to 4C-4657 Puller in tool chart on page 21

Service Manual Reference: 214B Power Train Disassembly and Assembly, SENR4315		
Item	Description	Use
5	Seal Driver	Use to install 8U-0534 Seal in 8U-2509 Cover (transmission); Supplier Part No. 5870-051-019
6	Support	Use to remove 5W-5382 Needle Bearing from 8U-2457 Gear (transmission); Supplier Part No. 5870-300-011

(Continued)

Service Tools for 213B and 214B Excavators (Continued)

SMCS Code: 4000-017
Model: 213B and 214B Excavators
Warranty: Six Months

Service Manual Reference: 214B Power Train Disassembly and Assembly, SENR4315			
Item	**Part Number**	**Description**	**Use**
Service Manual Reference: 214B Power Train Disassembly and Assembly, SENR4315			
1	4C-4058	Spanner Wrench	Use to remove and install 8U-2342 Nut (front and rear final drive); Supplier Part No. 5870-401-105
2	4C-4059	Plate Centering (2)	Use to determine shim thickness for pinion gear tooth contact (front and rear differential); Supplier Part No. 5870-500-010
3	4C-4060	Disc Alignment Tool	Use to align clutch plates (transmission); Supplier Part No. 5870-901-013
4	4C-4061	Centering Plate	Use to remove and install 8U-2342 Nut (front and rear final drive)
7	4C-4657	Puller	Use to remove 5W-5382 Needle Bearing from 8U-2457 Gear (transmission); Supplier Part No. 5870-300-012
Not Shown	4C-4655	Seal Driver	Use to install discontinued 8U-2355 Seal in 8U-2357 Flange (front and rear final drive); Supplier Part No. 5870-051-018

Service Manual Reference: 214B Vehicle Systems Disassembly and Assembly SENR3796 and 214B Hydraulic System Testing and Adjusting SENR4301

Item	Part No.	Description	Use
1	FT2294	Alignment Bar	Use for steering alignment with 1P-2385 Protractor
2	FT2296	Wrench, 41mm	Use for steering alignment and steering cylinder removal and installation; made from 214-7329 Wrench

Service Manual Reference: Collar, shaft, etc. arrangement described on page 71 of 213B Vehicle Systems Disassembly and Assembly SENR3794, and page 66 of 214B Vehicle Systems Disassembly and Assembly SENR3796

Part Number	Description	Use
4C-4767	Spanner Wrench	Applicable to both 213B and 214B Excavator. Required for removal and installation of the 8U-2523 Collar (Nut) from the 8U-2514 Shaft, included in the 8U-2512 Swing Drive Group.

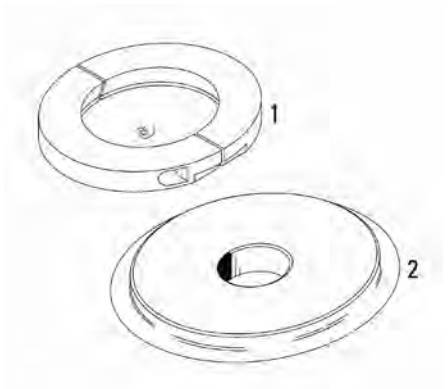
4C-4067 Hex Wrench

Part Number	Description	Use
4C-4067	Hex Wrench, 22 mm	Required to remove and install the 10 fill and drain plugs in the 214B Excavator final drives and axles. General usage tool.

Front and Rear Axle Service Tools

Essential Tool

SMCS Code: 4054-010, 4055-010, 4303-010
Model: M318 Material Handler and M320 Wheeled Excavator
Warranty: Six Months



- Used to service front and rear axles
- 147-1744 used to remove 8U-2356 Inner Bearing Cone from front steering axle housing and hub flange of rear axle -- allows for easy removal of bearings without damaging bearing cone
- FT2562 used to remove and install wheel hub spanner nut on rear axle -- prevents 127-9304 Hook Spanner from disengaging from spanner nut

Reference

SENR1157, Disassembly and Assembly M320 Excavators Power Train

147-1744 Bearing Puller (Item 1)	
Outside diameter of bearing cone	163.40 mm (6.433 in)
Height of bearing cone	25.0 mm (0.984 in)
FT2562 Centering Plate (Item 2)	
Make from	4C-4061

268-8781 Grab Sleeve, 282-4325 Grab Sleeve

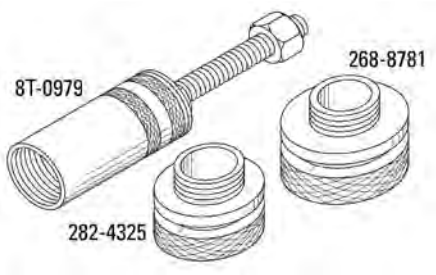
Essential Tool

SMCS Code: 4054-010
Model: M300C Update Axles - MT-E3050/3060 MT-E3070
Warranty: Six Months

- Used to easily remove differential carrier bearings without damage
- Used with 8T-0979 Basic Set Bearing Removal Tooling

Reference

RENR7011, M318C MH, M322C, M322C Material Handler Disassembly and Assembly Manual



Part Number	Description
268-8781	Grab Sleeve
282-4325	Grab Sleeve

Tie Rod Separator Group

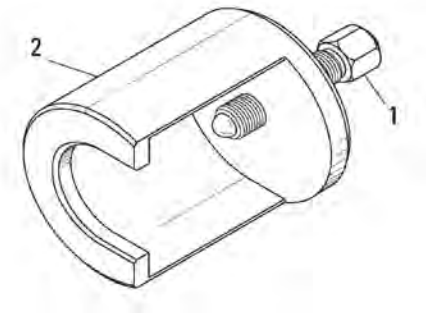
Essential Tool

SMCS Code: 4318-011, 4329-011
M315C, M316C, M318C, M318C MH, M318D, M322C MH, and M322D Wheel-Type Excavators, 24M Motor Grader
Warranty: Six Months

- Used to remove and separate tie rod ends without damage to taped bore
- Used with a 7/8 inch socket (hex end of screw assembly)
- Steel ball in end of screw assembly locates tool on tie rod and rotates to lessen friction as pressure is applied
- Made of heavy-duty steel for long service life
- 267-7513 Separator Group is used on M315C, M316C, M318C, M318C MH, and M322C MH Wheel-Type Excavators
- 329-4995 Separator Group is used on M318D and M322D Wheel-Type Excavators, and M24 Motor Grader

References

RENR8618, M315C Wheeled Excavator, Power Train, Disassembly and Assembly
RENR8621, M316C Wheeled Excavator, Power Train, Disassembly and Assembly
RENR8622, M318C and M322C Wheeled Excavators, Power Train, Disassembly and Assembly
KENR6035, M318D Material Handler, Power Train, Disassembly and Assembly
KENR6040, M322D Wheeled Excavator, Power Train, Disassembly and Assembly
KENR6042, M322D Material Handler, Power Train, Disassembly and Assembly
KENR6022, 24M Motor Grader, Machine Systems, Disassembly and Assembly

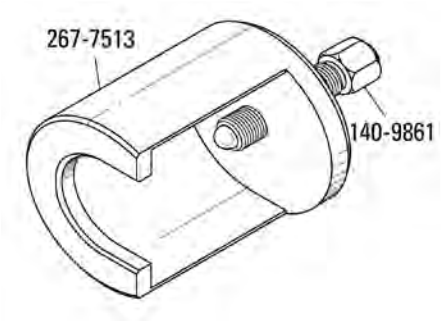


Item	Description
1	Screw Assembly

Item	Part Number	Description
2	267-7513	Separator Group
Not Shown	329-4995	Separator Group

267-7513 Separator Group
Essential Tool

SMCS Code: 4318-011, 4329-011
Model: M315C, M316C, M318C Wheel -Type Excavators
Warranty: Six Months



- Used to remove and separate tie rod ends without damage to taped bore
- Used with a 7/8 inch socket (hex end of screw assembly)
- Steel ball in end of screw assembly locates tool on tie rod and rotates to lessen friction as pressure is applied
- Made of heavy-duty steel for long service life
- 140-9861 Screw Assembly not serviced

References

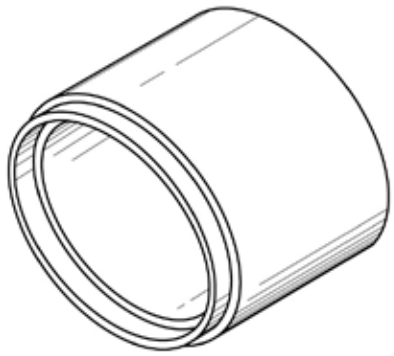
RENR8618, M315C Wheel-Type Excavator, Disassembly and Assembly Service Manual
RENR8621, M316C Wheel-Type Excavator, Disassembly and Assembly Service Manual
RENR8622, M318C Wheel-Type Excavator, Disassembly and Assembly Service Manual

Part No.	Description
140-9861[1]	Screw Assembly
[1] Not serviced	

Part Number	Description
267-7513	Separator Group

FT2534 Seal Installer

SMCS Code: 5459-017
Model: 213B, 214B, 224B, M318 and M320 Excavators
Warranty: None



- Used to install 8U-2524 Seal into swing drive housing
- Makes installation of seal easier and faster
- Prevents damage to seal caused by using improper tools
- Material: SAE 1026 steel or nylon tubing

Reference

SENR6264, Disassembly and Assembly M318 Excavators Machine Systems

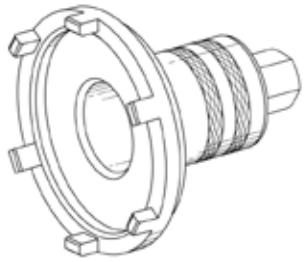
239-7305 Hook Spanner
Essential Tool

SMCS Code: 4054-010
Model: M318C Wheel Excavator
Warranty: Six Months

Part Number	Description
239-7305	Hook Spanner

- Used to remove and install axle locknut without damage

Reference
SENR6264, Disassembly and Assembly of M318C Wheeled Excavator



195-3446 Socket Wrench, 4 3/8 in
Essential Tool

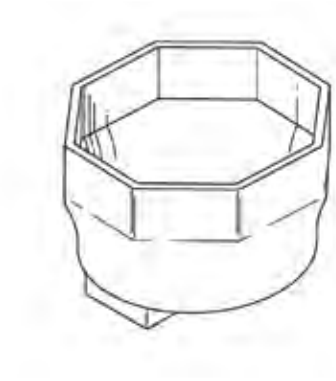
SMCS Code: 3254-010
Model: 325B Wheeled Carrier Material Handler
Warranty: Six Months

Part Number	Description
195-3446	Socket Wrench, 4 3/8 in

- Used to remove and install drive axle bearing retainer nut

Reference
RENR4017, 325B Wheeled Carrier Material Handler Disassembly and Assembly Manual

Socket size	4 3/8 in
Square drive	3/4 in
Overall length	87.0 mm (3.4 in)

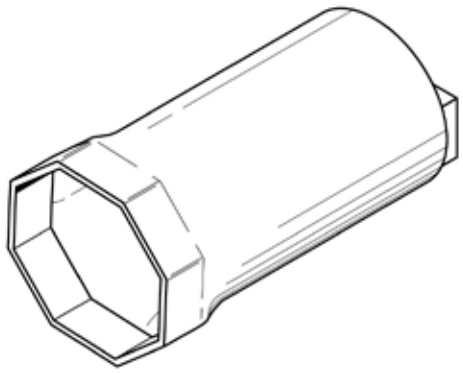


FT2780 Socket Wrench

SMCS Code: 3254-010
Model: 325B MH Wheeled Carrier
Warranty: None

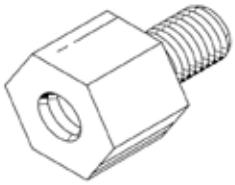
- Used to remove and install bearing retaining nut on front axle
- Made from current 195-3446 Socket Wrench
- Rework 195-3446 by removing weld from bar (square drive end), add extension tube, and reweld to form new tool
- Material: SAE1026 steel

Reference
325B MH Wheeled Carrier Disassembly and Assembly Service Manual



246-1095 Threaded Adapter
Essential Tool

SMCS Code: 4054 -010
Model: M325C Material Handler
Warranty: Six Months



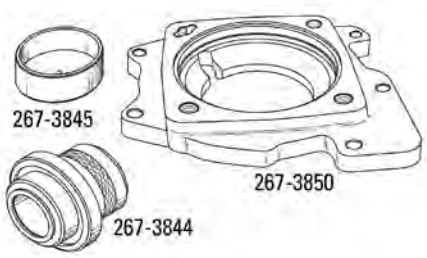
- Used to adapt M24 x 3.0 metric male puller stud to M27 x 2.0 metric male puller stud
- Used with 9U-5343 Puller Stud, 9U-5345 Fast Runner Nut, 6V-3160 Hydraulic Cylinder, and 7F-6068 Receiving Sleeve
- Removes king pins from steering knuckle
- Heat-treated for a maximum load limit of 27 t (30 tons)

Reference
M325C Material Handler Service Manual, Powertrain Disassembly and Assembly

Part Number	Description
246-1095	Threaded Adapter

M325C Material Handler Transmission Tools
Essential Tool

SMCS Code: 4000-017
Model: M325C Material Handler
Warranty: Six Months



- Used to properly assemble transmission
- Simplifies installation of various transmission service parts

Reference
RENR7164-00, M325C Material Handler Powertrain Disassembly and Assembly

Part Number	Description	Use
267-3844	Seal Installer	properly install output shaft seal to correct depth without calculations (made from durable plastic to prevent seal damage during installation)
267-3845	Guard Installer	install output shaft seal guard to proper depth without calculations
267-3850	Clearance Gauge	measure clearance between transmission clutch / brake disc during assembly

188-7400 Brake Piston Installer

SMCS Code: 4004-017
Model: M312, M318 Wheeled Hydraulic Excavator
Warranty: Six Months

Part Number	Description
188-7400	Brake Piston Installer

- Makes installation of brake piston faster
- Reduces possibility of damage to the brake piston seals

Reference
SENR6258-02, Disassembly and Assembly M318 Excavator-Machine Systems

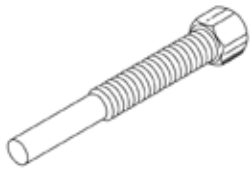
123-6691 Measuring Screw

SMCS Code: 4004-017
Model: M300 Series Wheeled Hydraulic Excavator
Warranty: Six Months

Part Number	Description
123-6691	Measuring Screw

- Used to measure brake wear

References
RENR5565, M318C Testing and Adjusting
RENR5567, M316C Testing and Adjusting
RENR6961, M315C Testing and Adjusting
RENR6984, M313C Testing and Adjusting
RENR7014, M322C Testing and Adjusting
RENR1180, M312 Testing and Adjusting
RENR1181, M315 Testing and Adjusting
RENR1182, M318 Testing and Adjusting
RENR1183, M320 Testing and Adjusting



140-1833 Bearing Retaining Nut Spanner Wrench

SMCS Code: 5459-017
Model: M312 Wheeled-Excavator
Warranty: Six Months

- Used to remove and install bearing retainer nut in swing drive assembly
- Makes repair of swing drive much faster and easier

Reference
SENR8950, Disassembly and Assembly M312 Excavator Machine Systems

Outside diameter	107.95 mm (4.25 in)
Inside diameter	92.6 mm (3.646 in)
Diameter inside teeth	85.66 mm (3.372 in)
Tooth width	7.35 mm (0.289 in)
Number of teeth	4
Square drive	1 in

Part Number	Description
140-1833	Bearing Retaining Nut Spanner Wrench

123-6698 Measuring Ring

SMCS Code: 5459-017
Model: M300 Series Wheeled Hydraulic Excavator
Warranty: Six Months

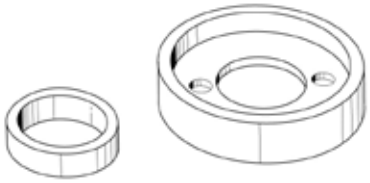
- Used to adjust rolling torque on pinion

References
RENR6964, M315C Power Train Disassembly and Assembly
RENR6991, M316C Power Train Disassembly and Assembly
SENR6258, M318, M320 Power Train Disassembly and Assembly

Part Number	Description
123-6698	Measuring Ring

123-6703 Centering Disk

SMCS Code: 5459-017
Model: M300 Series Wheeled Hydraulic Excavator
Warranty: Six Months



- Used to remove and install final drive planetary nut
- Used with 123-6704 Centering Ring

References
RENR6675, M318C Power Train Disassembly and Assembly
RENR6964, M315C Power Train Disassembly and Assembly
RENR6991, M316C Power Train Disassembly and Assembly
SENR6258, M318, M320 Power Train Disassembly and Assembly
SENR8944, M312 Power Train Disassembly and Assembly
SENR8924, M315 Power Train Disassembly and Assembly

Part Number	Description
123-6703	Centering Disk

123-6704 Centering Ring

SMCS Code: 5459-017
Model: M300 Series Wheeled Hydraulic Excavator
Warranty: Six Months

- Used to remove and install final drive planetary nut
- Used with 123-6703 Centering Ring

References
RENR6675, M318C Power Train Disassembly and Assembly
RENR6964, M315C Power Train Disassembly and Assembly
RENR6991, M316C Power Train Disassembly and Assembly
SENR6258, M318, M320 Power Train Disassembly and Assembly
SENR8944, M312 Power Train Disassembly and Assembly
SENR8924, M315 Power Train Disassembly and Assembly

Part Number	Description
123-6704	Centering Ring

305-4538 Hook Spanner, 240-8274 Spanner Insert

Essential Tool

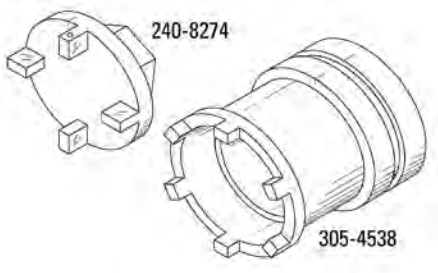
SMCS Code: 5459-017
Model: M318 Wheeled Excavator (8AL-2385-UP), M318C, M318D, M322C, M322D Wheeled Excavator, M322C, M322D Material Handler Wheeled Excavator
Warranty: Six Months

- Used to remove and install 179-3152 Collar Nut in swing drive assembly
- Designed for high torque requirements

Reference

RENR6676-03, M318C Disassembly and Assembly Service Manual - Machine Systems

Part Number	Description
240-8274	Spanner Insert
305-4538	Hook Spanner



304-5800 Socket

Essential Tool

SMCS Code: 5459-017
Model: M313C, M313D, M315C, M315D, M316C, M316D Wheeled Hydraulic Excavator
Warranty: Six Months

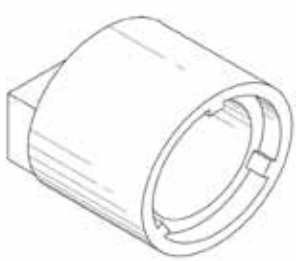
- Used to remove and install 155-0835 Bearing Retainer Nut from swing drive
- Used with 3/4 inch square drive torque wrench

Reference

M313C & D, M315C & D, M316C & D Disassembly and Assembly Service Manuals

Square drive	3/4 in
Tooth width	9.5 mm (0.38 in)
Tooth spacing	3, equally spaced

Part Number	Description
304-5800	Socket



Seal Installer and Pinion Backlash Tools for M300C Axles

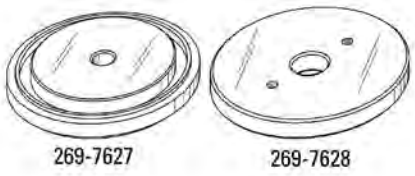
Essential Tool

SMCS Code: 4054-010
Model: M300C Wheeled Excavators
Warranty: Six Months

References

RENR8618, M315C Power Train
RENR8621, M316C Power Train
RENR8622, M318C Power Train

Part Number	Description	Use
269-7627	Seal Installer	Makes large axle seal installation easier and more accurate
269-7628	Disk Measure	Determines shim thickness for pinion backlash



9U-6047 Driver

SMCS Code: 5459-017
Model: M300 Series Wheeled Hydraulic Excavator
Warranty: Six Months

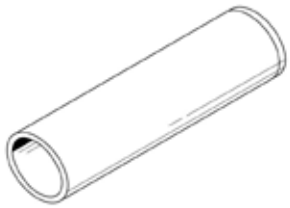
- Used to install lock plate on transfer case output shaft
- Used with 8T-0975 Handle

References
RENR6675, M318C Power Train Disassembly and Assembly
RENR6964, M315C Power Train Disassembly and Assembly
RENR6991, M316C Power Train Disassembly and Assembly
SENR6258, M318, M320 Power Train Disassembly and Assembly

Part Number	Description
9U-6047	Driver

9U-6048 Seal Guide

Warranty: Six Months



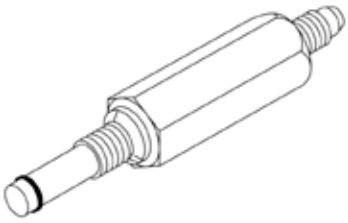
- Used to install seal on transmission drive shaft

References
RENR6675, M318C Power Train Disassembly and Assembly
RENR6964, M315C Power Train Disassembly and Assembly
RENR6991, M316C Power Train Disassembly and Assembly
SENR6258, M318, M320 Power Train Disassembly and Assembly

Part Number	Description
9U-6048	Seal Guide

9U-6049 Hydraulic Adapter

SMCS Code: 5459-017
Model: M300 Series Wheeled Hydraulic Excavator
Warranty: Six Months



- Used to test transmission clutch seals for leakage after assembly

References
RENR6675, M318C Power Train Disassembly and Assembly
RENR6964, M315C Power Train Disassembly and Assembly
RENR6991, M316C Power Train Disassembly and Assembly
SENR6258, M318, M320 Power Train Disassembly and Assembly
SENR8924, M315 Power Train Disassembly and Assembly

Part Number	Description
9U-6049	Hydraulic Adapter

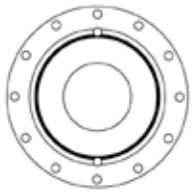
9U-6050 Measuring Cover

SMCS Code: 5459-017
Model: M300 Series Wheeled Hydraulic Excavator
Warranty: Six Months

Part Number	Description
9U-6050	Measuring Cover

- Used to measure transmission brake preload

References
RENR6675, M318C Power Train Disassembly and Assembly
RENR6964, M315C Power Train Disassembly and Assembly
RENR6991, M316C Power Train Disassembly and Assembly
SENR6258, M318, M320 Power Train Disassembly and Assembly



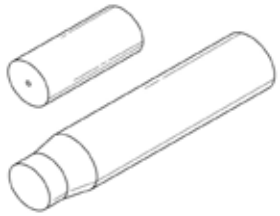
9U-6053 Seal Installer

SMCS Code: 5459-017
Model: M300 Series Wheeled Hydraulic Excavator
Warranty: Six Months

Part Number	Description
9U-6053	Seal Installer

- Used to install brake piston seal

Reference
SENR6258; M318, M320 Power Train Disassembly and Assembly



9U-6071 Assembly Jig

SMCS Code: 5459-017
Model: M300 Series Wheeled Hydraulic Excavator
Warranty: Six Months

Part Number	Description
9U-6071	Assembly Jig

- Used to remove and install transmission clutch retainer rings

References
RENR6675, M318C Power Train Disassembly and Assembly
RENR6964, M315C Power Train Disassembly and Assembly
RENR6991, M316C Power Train Disassembly and Assembly
SENR6258; M318, M320 Power Train Disassembly and Assembly

123-6707 Seal Driver

SMCS Code: 5459-017
Model: M300 Series Wheeled Hydraulic Excavator
Warranty: Six Months

- Used to install shaft seal on axle hub
- Use with 8T-0994 Handle

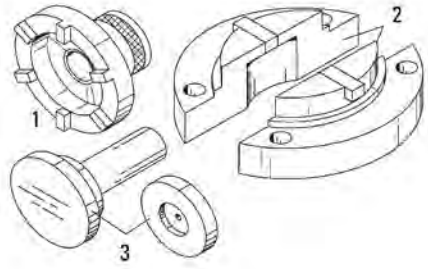
References

RENR6675, M318C Power Train Disassembly and Assembly
RENR6964, M315C Power Train Disassembly and Assembly
RENR6991, M316C Power Train Disassembly and Assembly
SENR6258, M318, M320 Power Train Disassembly and Assembly

Part Number	Description
123-6707	Seal Driver

Service Tools for M312 Wheeled Excavator

SMCS Code: 4318-010, 4055-010, 4255-010, 4054-010, 4321-010, 4253-010, 3278-010, 4266-010, 3150-015, 3150-016, 3258-RE-016
Model: M312 Wheeled Excavators
Warranty: Six Months



- Used to disassemble and assemble axle, differential, and transmission
- Used with other available hand tools to make repairs go much easier and faster

Axle Tooling

- 129-1063 Riveter used to install plugs in internal gear housing and wheel hub
- 135-9811 Brake Spring Pliers used to remove and install brake springs
- 135-9814 Hook Spanner used to remove and install wheel hub spanner nut on both front and rear axles
- 135-9818 Tie Rod Separator used to disassemble tie rods from steering knuckles

Differential Tooling

- 135-9816 Seal Driver used to install shaft seals into rear of differential housing

Transmission Tooling

- 135-9817 Hook Spanner used to remove spanner nuts from spur gear drive assembly
- 137-7551 Spanner Nut Retainer Group used to retain lower spanner nut while tightening upper spanner nut
- 137-7552 Measuring Pin is used to adjust multi-disk clutch group

Reference

SENR8944, Disassembly and Assembly M312 Excavator Power Train

(Continued)

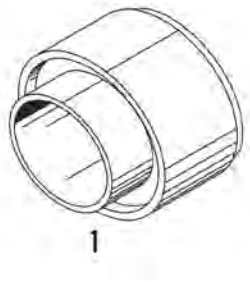
Service Tools for M312 Wheeled Excavator (Continued)

SMCS Code: 4318-010, 4055-010, 4255-010, 4054-010, 4321-010, 4253-010, 3278-010, 4266-010, 3150-015, 3150-016, 3258-RE-016
Model: M312 Wheeled Excavators
Warranty: Six Months

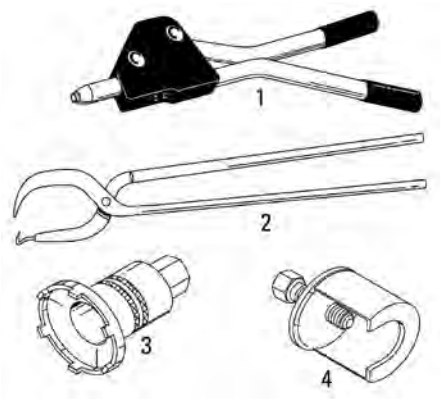
Transmission Tooling	
135-9817 Hook Spanner (Item 1)	
Outside diameter	69.72 mm (2.745 in)
Tooth inside diameter	54.94 mm (2.163 in)
Tooth width	7.16 mm (0.282 in)
Tooth height	12.37 mm (0.487 in)
Number of teeth	6
Hex size	30 mm
137-7551 Spanner Nut Retainer Group (Item 2)	
137-7552 Measuring Pin (Item 3)	
Flange outside diameter	13.80 cm (5.433 in)
Hub outside diameter	99.8 mm (3.929 in)
Shaft outside diameter	49.5 mm (1.949 in)
Shaft length	12.30 cm (4.843 in)
Hub thickness	14.0 mm (0.551 in)
Top plate thickness	20.0 mm (0.787 in)
Top plate outside diameter	11.40 cm (4.49 in)

Differential Tooling

Differential Tooling
135-9816 Seal Driver (Item 1)



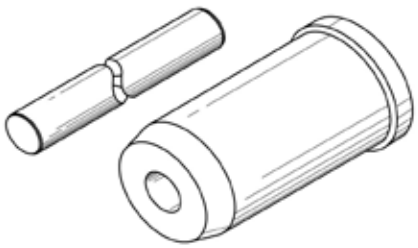
Axle Tooling



Axle Tooling	
129-1063 Riveter Kit (Item 1)	
Overall length	53 cm (21 in)
Tips	3, interchangeable
135-9811 Brake Spring Pliers (Item 2)	
Overall length	66 cm (26 in)
Replaceable tip	135-9879
135-9814 Hook Spanner (Item 3)	
Outside diameter	13.77 cm (5.421 in)
Tooth inside diameter	11.84 cm (4.66 in)
Tooth width	9.98 mm (0.393 in)
Tooth height	12.52 mm (0.493 in)
Number of teeth	6
Hex size	36 mm
135-9818 Tie Rod Separator (Item 4)	
Outside diameter	82.72 mm (3.257 in)
Inside diameter	54.0 mm (2.13 in)
Shaft length (outer)	93.5 mm (3.68 in)
Shaft length (inner)	87.15 mm (3.431 in)
Thread	3/4-16

FT2511 Alignment Shaft

SMCS Code: 6606-010
Model: CS531, 533, 563, 573, and 583; CP533 and 563 Compactors
Warranty: None



- Used to align shaft of eccentric weight when assembling outer bearing carrier onto drum [supports left-hand (driven) eccentric weight shaft]
- Bushing (1) aligns rod (2) in bearing of inside carrier which aligns shaft of eccentric weight (with shaft of eccentric weight in a horizontal position, outboard bearing carrier can be installed over shaft of eccentric)
- Tooling is not required for right-hand eccentric weight shaft
- Tool replaces pry bar called for in Service Manual
- Material: SAE 1018 Steel

References
KENR1627, Service Manual
QEWQ9168, Assembly Wall Chart
KENR1627
KENR1884
KENR2583
KENR2663
KENR2693
Align shaft of eccentric weight with outer bearing carrier using bushing (1) and rod (2).

Service Tools for Lexion Combines

Essential Tool

SMCS Code: 0700
Model: 450, 460, 465, 480, and 485 Lexion Combines
Warranty: Six Months

References

SEBU7117, Operation and Maintenance Manual for 480 and 485
SEBU7119, Operation and Maintenance Manual for 450, 460 and 465
RENR1645, Service Manual, Disassembly and Assembly for 450, 460 and 465
RENR1708, Service Manual, Disassembly and Assembly for 480 and 485

Part Number	Description	Use
162-4138	Eyebolt, M22 x 1.5 thread	Remove hydrastatic drive pump
176-5320	Coupling Nut, M10 x 1.5, 24 mm long	--

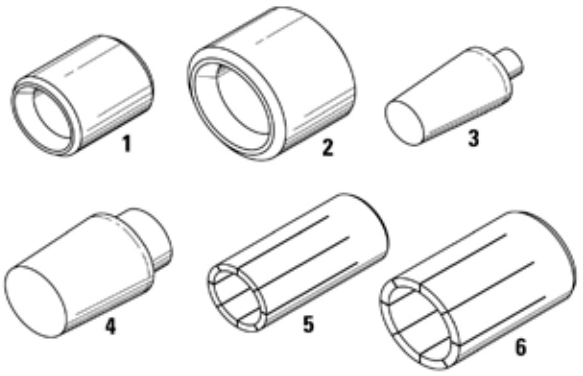
FT2771 Tool Group

Essential Tool

SMCS Code: 0700
Model: All Lexion Combine Models
Warranty: None

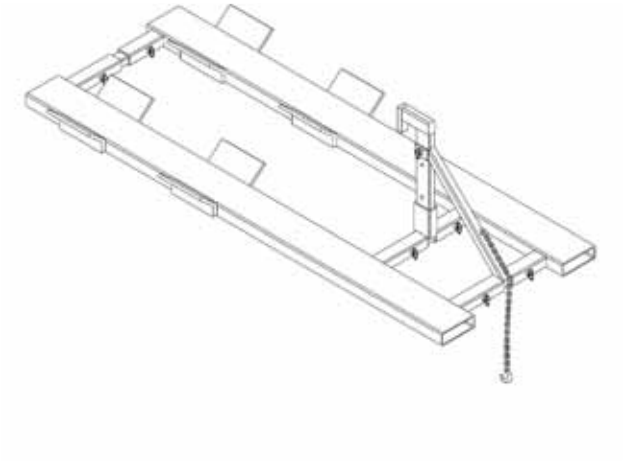
- Used to install seals on swivel pipes of mud hog hydraulic rear axle motors

Item	Description	Material
1	Sleeve	SAE 1018 steel
2	Sleeve	SAE 1018 steel
3	Thimble	SAE 1018 steel
4	Thimble	SAE 1018 steel
5	Pusher	Nylon
6	Pusher	Nylon



FT2728 Bracket Assembly
Essential Tool

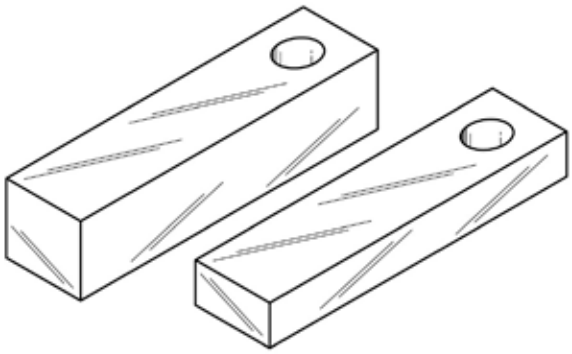
SMCS Code: 0700
Model: All Rotary Separation Lexion Combines
Warranty: None



- Used to remove and install complete rotary separation assembly as 1 unit from back of combine
- Designed to fit forks of a Cat® Telehandler

FT2618 Gauge Group

SMCS Code: 0700
Model: Lexion Combines
Warranty: None



- Used to measure clearance between a cylinder bar and a concave bar (part of threshing system)
- Material: SAE1020 steel

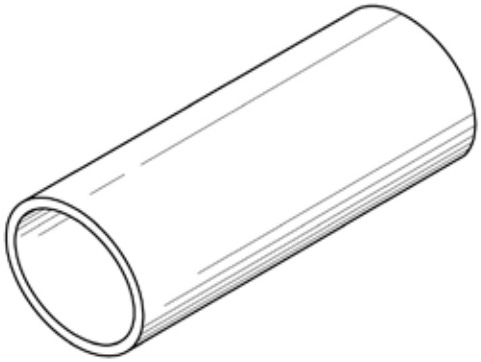
FT2713 Bearing Driver Group

SMCS Code: 5946-016
Model: 630, 830, 836, 1222, and 1230 Corn Heads
Warranty: None

- Used to install bearings and seals in corn head gearboxes
- Material: ASTM A519 Steel

Reference

RENR1657, Disassembly and Assembly of Corn Heads



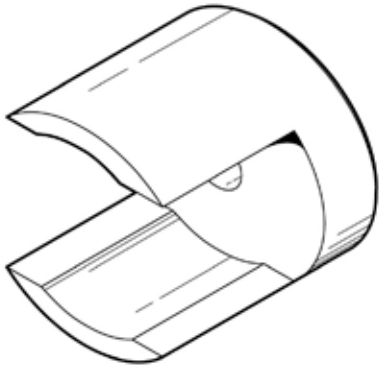
FT2722 Bearing Installer
Essential Tool

SMCS Code: 4351-017
Model: 450, 460, 465, 470, 480, and 485 Lexion Combines
Warranty: None

- Used to disassemble and assemble rear wheel assist motors
- Used with a shop press to preload tapered roller bearings
- Provides method to remove and install bearing retaining ring
- Material: SAE4140 steel
- Heat-treat specification: Rc 28 to 32

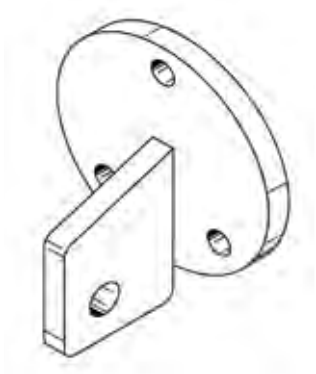
Reference

RENR1649, Power Train Disassembly and Assembly



148-2700 Lifting Bracket Assembly

SMCS Code: 6608-015, 6608-016, 6608-017, 6606-010
Model: 500C Series Compactors
Warranty: Six Months



European Union compliant, CE marked

- Used to remove and install eccentric weights in pods of compactor drum -- saves time and eliminates bearing damage during assembly and disassembly of drum
- Offset lifting point provides correct positioning for level lifting of eccentric weight
- Bolts to top of eccentric weight and uses standard 12.7 mm (0.5 in) shackle

Weight	0.7 kg (2 lb) approx.
Diameter	99 mm (4 in)
Height	65 mm (2.5 in)
Lifting hole	13.8 mm (0.54 in)

Part Number	Description
148-2700	Lifting Bracket Assembly

187-1841 Seal and Wear Sleeve Installer, 192-6339 Crankshaft Seal Locator Assembly

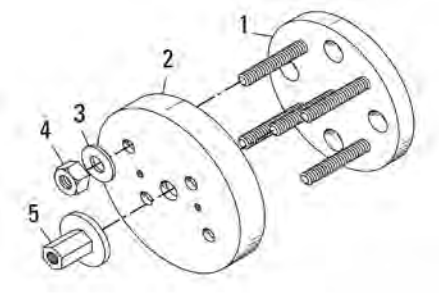
Essential Tool

SMCS Code: 1161-012
Model: 3524B Tandem Engine in 797 Off-Highway Trucks
Warranty: Six Months

- Used to install 155-0423 Seal and Wear Sleeve Group on crankshaft of rear engine
- Used with one 9S-8858 Nut Assembly, four 5P-8249 Nuts, and four 5P-8249 Washers (must be ordered separately)

Application Procedure

1. Bolt locator to crankshaft using 4 existing crankshaft bolts.
2. Place wear sleeve in installer and place installer over 5 studs on locator.
3. Install 4 washers and nuts on outside studs and nut assembly on center stud.
4. Tighten all 5 nuts simultaneously to insure proper installation.



Item	Part Number	Description
1	192-6339	Crankshaft Seal Locator Assembly
2	187-1841	Seal And Wear Sleeve Installer
3	5P-8249	Hard Washer[1]
4	2J-3505	Full Nut
5	9S-8858	Nut Assembly

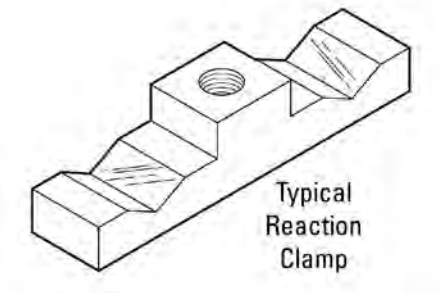
[1] Used to attach 138-7574 Link Brackets to D7E EDPM.

Reaction Clamps

SMCS Code: 3108-010
Model: 797 Off-Highway Trucks
Warranty: Six Months

Part Number	Description
176-6541	Reaction Clamp
176-6542	Reaction Clamp

- Used to provide torque reaction stop for hydraulic torque wrenches
- Allows correct tightening torque
- Easy installation provides faster service



160-1729 Engine Lifting Bracket Assembly

Essential Tool

SMCS Code: 1003-010
Model: 797 Off-Highway Trucks (5YW), 797B Off-Highway Trucks (JSM)
Warranty: Six Months

European Union compliant, CE marked

- Used to remove and install engine and torque converter
- Predetermined chain lengths put lift point above center of gravity

Capacity	24,494 kg (54,000 lb)
Tool weight	708 kg (1,560 lb)

(Continued)

160-1729 Engine Lifting Bracket Assembly (Continued)

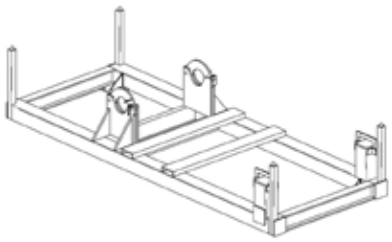
Essential Tool

SMCS Code: 1003-010
Model: 797 Off-Highway Trucks (5YW), 797B Off-Highway Trucks (JSM)
Warranty: Six Months

Part Number	Description
160-1729	Engine Lifting Bracket Assembly

203-9603 Shipping Stand Assembly (797 Tandem Engine)

SMCS Code: 1000-052
Model: 797 Off-Highway Trucks
Warranty: Six Months



- Made as ordered (MAO)
- Used to store and ship 3524 Engines
- Also used to ship remanufactured (Reman) engines

Reference

RENR2036, Service Manual, Powertrain Disassembly and Assembly

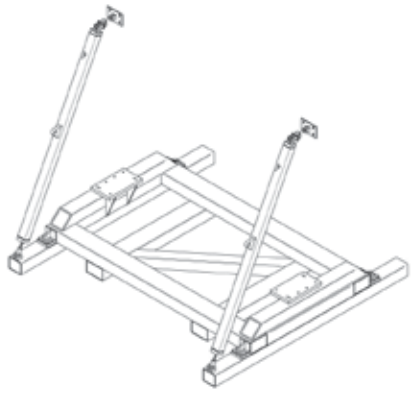
Part Number	Description
203-9603	Shipping Stand Assembly (797 Tandem Engine)

175-7532 Radiator Support Assembly
Essential Tool

SMCS Code: 1353-010
Model: 797 Off-Highway Trucks
Warranty: Six Months

Part Number	Description
175-7532	Radiator Support Assembly

- Used to hold radiator with shrouding and ladders in vertical position
- Provides a secure platform for off-truck maintenance of radiator
- 3-piece assembly for easier shipping and storage
- Designed with fork lift tubes for easier movement



313-9094 Riser Group, 313-9095 Brace Assembly
Essential Tool

SMCS Code: 1353
Model: 797F and 795F Off-Highway Trucks
Warranty: Six Months

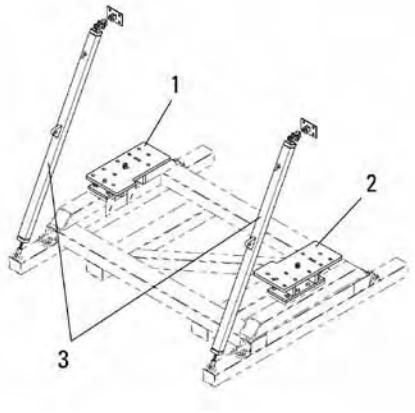
- Used to hold radiator, with shrouding and ladders, in vertical position
- Used with 175-7532 Radiator Support Assembly
- Provides a secure platform for off-truck maintenance of radiator assembly
- 313-9095 Brace Assembly, 313-9096 LH Fixture Assembly Riser, and 313-9097 RH Fixture Assembly Riser are serviced separately

313-9094 Riser Group

- Consists of left-hand fixture assembly, right-hand fixture assembly, and necessary mounting hardware
- Eyebolt allows use of overhead lifting device for assembly onto 175-7532
- Dowel pins precisely locate risers on 175-7532
- Multiple bolt hole pattern fits a variety of radiator mounting brackets

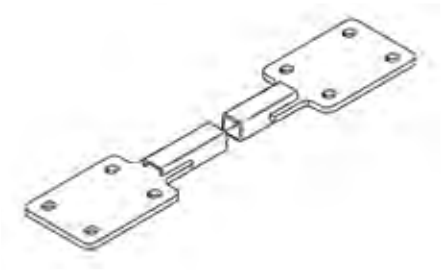
313-9095 Brace Assembly

- Part of 175-7532 Radiator Support Assembly
- Consist of two-position upper strut and adjustable threaded lower ball joint connection for use with a variety of radiator assemblies



Item_3	Part Number	Description
--	313-9094	Riser Group
1	313-9096	Left-Hand Fixture Assembly, 251 Kg (553 lb)
2	313-9097	Right-Hand Fixture Assembly, 251 Kg (553 lb)
--	8T-0666	Bolt, M24 x 76.2 mm (3.0 in) long
--	6V-8237	Hard Washer (M24)
3	313-9095	Brace Assembly (part of 175-7532), 116 Kg (255 lb)

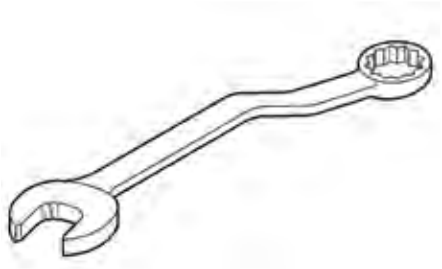
195-9649 Radiator Cowl Support Assembly
Essential Tool
SMCS Code: 7155-024
Model: 797 Off-Highway Trucks
Warranty: Six Months



- Made as ordered (MAO)
- Used to maintain side-to-side radiator assembly mounting dimension for side shrouds
- Used with 175-7532 Radiator Support Assembly
- Allows easy reinstallation of radiator assembly into truck frame after overhaul by ensuring accurate alignment with frame mounting pads
- Bolts to 4-hole mounting flange on side shroud
- Reduces risk of radiator core damage during overhaul
- Overall length: 3460.0 mm (136.0 in)

Part Number	Description
195-9649	Radiator Cowl Support Assembly

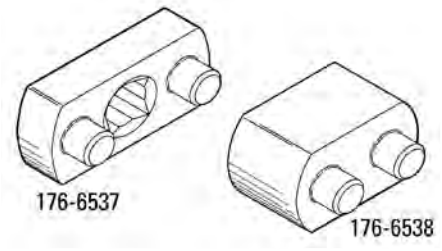
185-0622 Wrench, 30 mm (1.2 in)
Essential Tool
SMCS Code: 5083-010
Model: 797 Off-Highway Trucks
Warranty: Six Months



- Used to easily remove and install hydraulic hoist pump
- 30 mm (1.2 in) box end wrench is bent to reach pump mounting bolts
- Span: 30.0 mm (1.2 in)

Part Number	Description
185-0622	Wrench, 30 mm (1.2 in)

176-6537 Cylinder Pin Spanner Wrench, 176-6538 Ball Stud Spanner Wrench
Essential Tool
SMCS Code: 4305-017
Model: 797 Off-Highway Trucks
Warranty: Six Months



- Used to remove and install 152-5572 Cylinder Pin and 156-8136 Ball Stud Pin when servicing steering linkage (keeps pin or ball stud from turning)
- Used with 1 inch square drive wrench
- Provides pins that accurately fit reaction holes
- Heat treated for strength and long wear life

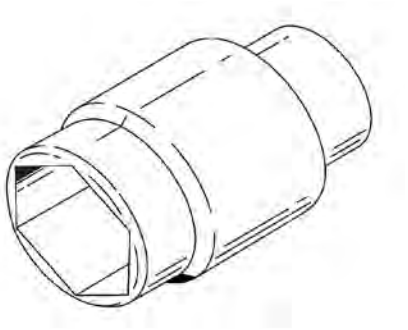
Part Number	Description	Center Distance Between Pins
176-6537	Cylinder Pin Spanner Wrench	68 mm (2.677 in)
176-6538	Ball Stud Spanner Wrench	36 mm (1.417 in)

203-5430 Modified Socket, 55 mm

Essential Tool

SMCS Code: 4305-010
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Used to remove and install steering arm bolts (M36 bolt with 55 mm hex head)
- Used with 1 inch square drive pneumatic or hydraulic wrench
- Modified to fit limited clearance of steering arm
- 6 point, deep well socket, with black industrial finish
- Rugged design works with impact wrench



Reference

RENR2037, Service Manual, Disassembly and Assembly

Outside diameter	82.5 mm (3.25 in)
Overall length	11.11 cm (4.38 in)
Cut-down diameter	74 mm (2.9 in)
Cut-down length from end	25.0 mm (0.98 in)
Square drive	1 in
Socket depth	38.1 mm (1.50 in)

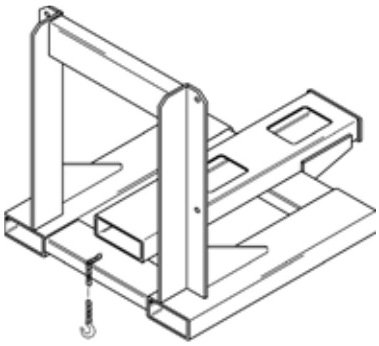
Part Number	Description
203-5430	Modified Socket, 55 mm

160-1831 Lifting Adapter Group

Essential Tool

SMCS Code: 3258-010, 4050-10
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Used to remove and install differential
- Used to remove first and second reduction planetaries and ring gear from final drive, with 153-1174 Adapter Assembly Group, 153-1175 Adapter Assembly Group and 152-7247 Lifting Outer Carrier Adapter Assembly
- Used with fork lift
- Large fork pockets accommodate many different sizes of forklifts

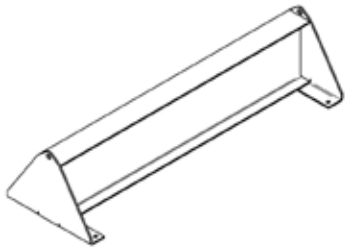


Fork pocket height	152 mm (6 in)
Fork pocket width	305 mm (12 in)
Fork pocket depth	1372 mm (54 in)
Inside spread for forks	787 mm (31 in)
Maximum capacity	3357 kg (7,400 lb)

Part Number	Description
160-1831	Lifting Adapter Group

195-6167 Roll-Over Stand
Essential Tool

SMCS Code: 3258-017
Model: 797 Off-Highway Trucks
Warranty: Six Months



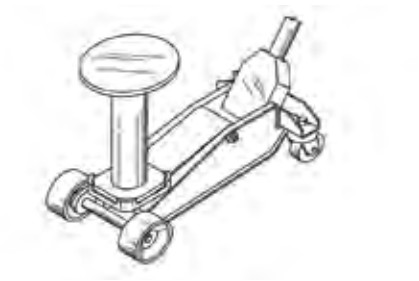
- Made as ordered (MAO)
- Used to disassemble and assemble differential [122 cm (48 in) height positions components for easier access]
- Used with 4C-9832 Roll Over
- Provides proper working access to improve accuracy and reduce disassembly and assembly time
- Requires permanent mounting
- Sold in pairs

Capacity	256000 kg (16000 lb)

Part Number	Description
195-6167	Roll-Over Stand

195-4988 Gear Extension Jack
Essential Tool

SMCS Code: 3258-025
Model: 797 Off-Highway Trucks
Warranty: Six Months



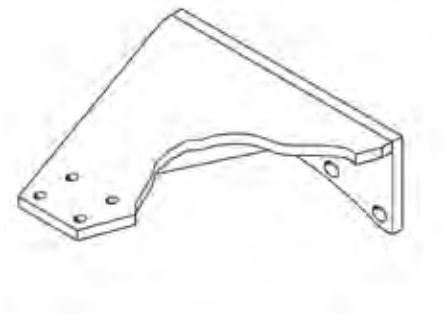
- Made as ordered (MAO)
- Used to raise and lower differential long shaft during backlash adjustment procedure
- Improves accuracy of bearing settings and bevel gear backlash adjustments
- Reduces assembly time (helps eliminate trial and error adjustments)

Capacity	1814 kg (2 tons)
Minimum height	495 mm (19.5 in)
Maximum height	565 mm (35.8 in)

Part Number	Description
195-4988	Gear Extension Jack

160-1728 Adapter Bracket Assembly
Essential Tool

SMCS Code: 3258-017
Model: 797 Off-Highway Trucks
Warranty: Six Months



- Used to support and rotate differential carrier during disassembly and assembly (2 brackets required)
- Used with 4C-9832 Large Engine Roll-Over Stand
- Bracket allows 360° rotation for easier access to all surfaces and attached components
- Bracket attaches to differential using 7X-0445 Hex Head Bolt, 7X-0451 Hex Nut, and 7X-0533 Flat Hard Washer
- Bracket attaches to engine stand using 7X-0370 Hex Head Bolt, 6V-8182 Hex Nut, and 8T-4994 Flat Hard Washer
- Length x Width x Height: 62.5 x 56.5 x 25.4 cm (24.60 x 22.25 x 10.00 in)

(Continued)

160-1728 Adapter Bracket Assembly (Continued)

Essential Tool

SMCS Code: 3258-017
Model: 797 Off-Highway Trucks
Warranty: Six Months

Part Number	Size	Quantity
Adapter Bracket Assembly		
160-1728	--	--
Attachment Hardware		
7X-0445	1 1/4-7 x 12.7 cm (5.0 in) long	8
7X-0451	1 1/4-7	8
7X-0533	1 1/4 in	16
7X-0370	3/4-10 x 88.9 mm (3.5 in) long	8
6V-8182	3/4-10	8
8T-4994	3/4 in	16

Differential Bearing Pullers

Essential Tool

SMCS Code: 3258-011
Model: 797 Off-Highway Truck
Warranty: Six Months

- Used to remove bearing cones without cutting/grinding inner bearing race (rollers and cage must be removed from race prior to use this tooling)
- Used with hydraulic cylinder, hose group, and pump
- Reduces risk to maintenance personnel due to broken race and cup (applies even removal force on entire bearing race)
- Reduces chance of damaging differential housing during bearing race removal

194-3725 Bearing Puller

- Removes discontinued 147-9507 Gear Heel Bearing Cone
- Used with discontinued 316-1490 Ram, 150 Ton

194-4802 Bearing Puller

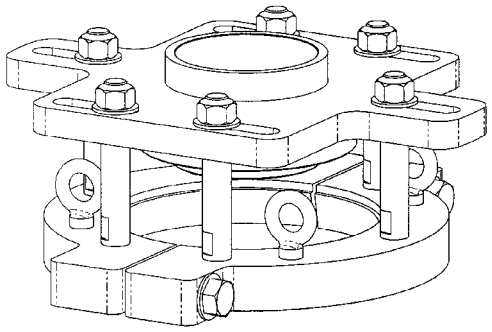
- Removes 147-9509 Gear Toe Bearing Cone
- Used with 196-0222 Ram, 100 Ton and 195-9659 Split Collar

194-4804 Bearing Puller

- Removes 147-9503 Pinion Heel Bearing Cone
- Used with 196-0222 Ram, 150 Ton

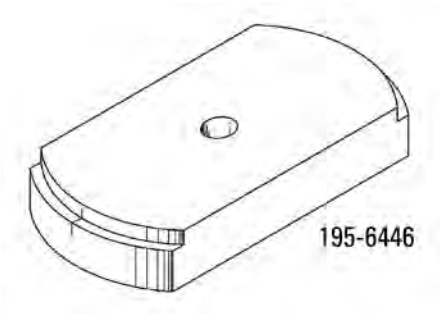
195-6446 Puller Plate

- Removes 6V-0460 Pinion Toe Bearing Cup
- Used with FT2747 Receiver Sleeve, discontinued 6V-0014 or 316-1491 Cylinder, threaded rod, and H-bar



Typical Bearing Puller

Service/Repair Parts - Differential Bearing Pullers



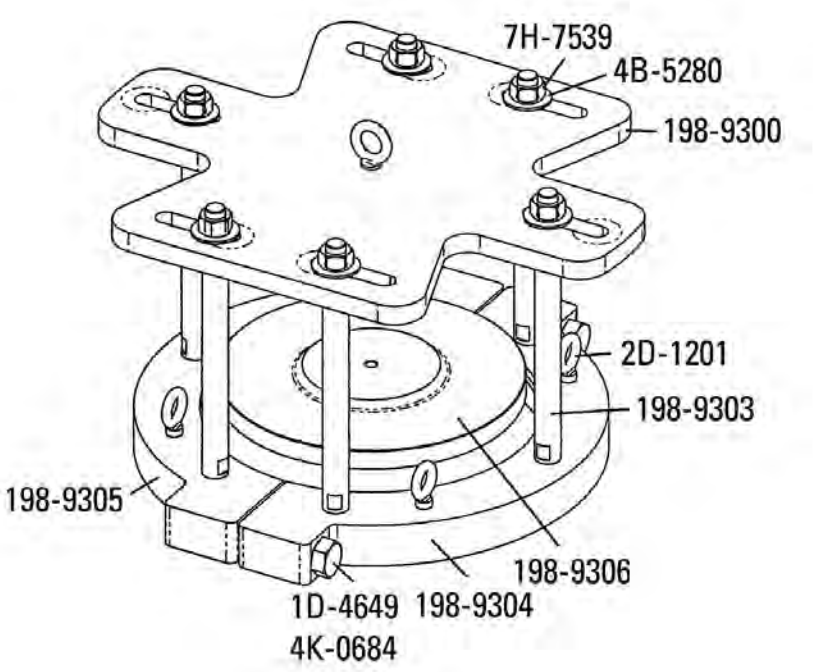
Part Number	Description
Service/Repair Parts	
1A-1935	Hex Nut, 1-14
4B-4285	Plain Washer, 1 in bolt
4B-4283	Plain Washer, 3/4 in bolt
5F-9338	Hex Head Cap Screw, 1 - 8 x 7.0 in long
1D-4616	Hex Head Cap Screw, 3/4 -10 x 6.0 in long
1D-4620	Hex Head Cap Screw, 3/4 - 10 x 7.0 in long

194-3725 Bearing Puller Group

Essential Tool

SMCS Code: 3258-011
Model: 797 Off-Highway Truck
Warranty: Six Months

- Used to remove differential long shaft heel bearing
- Decreases possible damage to shaft over using conventional cutting techniques
- Used with discontinued 316-1490 Cylinder Group and can be used with 194-6716 Weld-on Puller
- Capacity: 150 ton



Part Number	Description	Qty.
194-3725	Bearing Puller Group	--
1D-4649	Bolt	2
2D-1201	Eyebolt	4
4B-5280	Screw Washer	6
4K-0684	Hardened Washer	2
7H-7539	Nut - Full	6
198-9300	Puller Plate	1
198-9303	Puller Leg	6
198-9304	Split Collar	1

(Continued)

194-3725 Bearing Puller Group (Continued)

Essential Tool

SMCS Code: 3258-011
Model: 797 Off-Highway Truck
Warranty: Six Months

Part Number	Description	Qty.
198-9305	Split Collar	1
198-9306	Step Plate	1
198-9301	Spacer Plate	1

194-4804 Bearing Puller Group

SMCS Code: 3258-011
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Made as ordered (MAO)
- Used to pull large bearing from differential pinion
- Used with 196-0222 Cylinder Group and 199-8057 Hook Lifting Group
- Helps to eliminate shaft damage

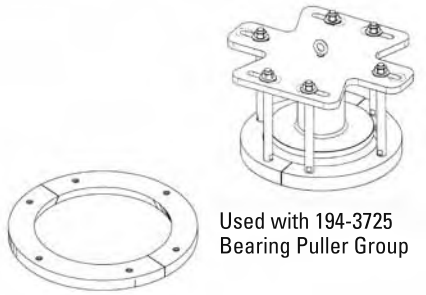
Part Number	Description
194-4804	Bearing Puller Group
Service/Repair Parts	
1A-1935	Full Nut
2D-1201	Eyebolt
5F-9338	Bolt
5P-8250	Hard Washer
199-7988	Puller Leg
199-7990	Split Collar
199-7991	Threaded Split Collar
199-7992	Puller Plate
199-7993	Step Plate

194-6716 Bearing Puller (Welded)

SMCS Code: 4050-010, 4080, 4205, 4208
Model: 797 Off-Highway Truck
Warranty: Six Months

Reference
Service Manual, Disassembly and Assembly of Differential on 797 Off-Highway Trucks

- Used to remove damaged discontinued 147-9507 Bearing Race from differential housing
- Used with 194-3725 Bearing Puller Group (150 ton) and hardware
- Throw-away tool used when bolt-on tool will not work (when roller lip on small diameter of bearing race is worn or broken away)
- Puller is welded directly to bearing race (weld completely on both sides and weld two halves together)
- Force required to remove race from shaft: 96 tons

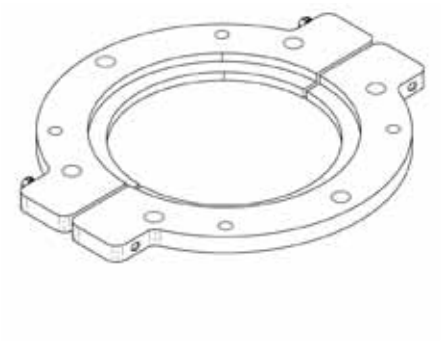


Used with 194-3725 Bearing Puller Group

Part Number	Description
194-6716	Bearing Puller (Welded)

196-0257 Adapter Group

SMCS Code: 3258-011
Model: 797 Off-Highway Truck
Warranty: Six Months



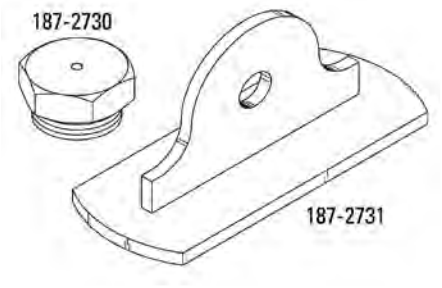
- Used to pull bearing cone and gear without damaging shaft

Part Number	Description
196-0257	Adapter Group
Service/Repair Parts	
1A-7669	Bolt
1D-4585	Bolt
4B-4280	Washer
4B-4281	Washer
199-8022	Split Collar
199-8023	Threaded Split Collar

187-2730 Adapter, 187-2731 Lift Bracket Assembly

Essential Tool

SMCS Code: 3258-017
Model: 797 Off-Highway Trucks (187-2730 Adapter for serial numbers 5YW1-Up and JSM1-129)
Warranty: Six Months



European Union compliant, CE marked (187-2731)

Adapter

- Used to lift bevel pinion gear assembly
- Used with 1P-7404 Eyebolt and overhead lifting device capable of lifting 340 kg (750 lb)
- To lift pinion gear, remove oil plug and install adapter
- Outside diameter threads: 2 1/2-12
- Inside diameter threads: 5/16-18

NOTE:

Make sure adapter is removed and replaced with original oil plug and a new O-ring.

Lift Bracket Assembly

- Used to lift differential housing during disassembly and assembly
- Used with 186-6089 Rollover Fixture, 186-6090 Rollover Fixture, or 186-6091 Rollover Fixture
- Used with overhead lifting device capable of lifting a rotating housing to 454 kg (1000 lb)
- Fits into rotating housing with differential gear
- Overall length: 220 mm (8.7 in)
- Lifting hole diameter: 25.4 mm (1.0 in)

Reference

RENR2036, Service Manual, Powertrain Disassembly and Assembly

Part Number	Description
187-2730	Adapter
187-2731	Lift Bracket Assembly

194-4810 Spider Gear Assembly Handler
Essential Tool

SMCS Code: 3258-010
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Used to lift spider gear assembly and side gear
- Used with 1U-7461 Press and 194-5246 Press Guide Plate
- Provides proper balance during installation and removal
- Reduces chance of chipping or damaging gears
- Designed for easy use with press equipment

Reference

RENR2036, Service Manual, Power Train Disassembly and Assembly

Used on	spider gear assembly
Overall size	180 x 430 x 1750 mm (7 x 17 x 69 in)
Weight	90 kg (40 lb)

Part Number	Description
194-4810	Spider Gear Assembly Handler

194-5246 Spider Gear Plate Assembly
Essential Tool

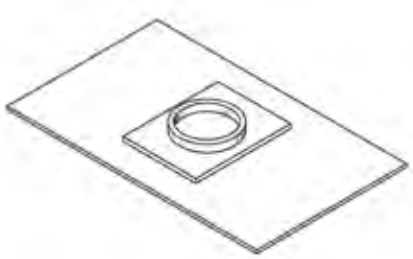
SMCS Code: 4050-010, 4080, 4205, and 4208
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Used to hold spider gear during bearing installation (reduces chance of handling damage)
- Used with 1U-7461 Economy Shop Press, 55 Ton and 194-4810 Lifting Device
- Overall size: 356 x 686 mm (14.0 x 27.0 in)

Reference

RENR2036, Power Train Disassembly and Assembly for 797 Off-Highway Truck Differentials

Part Number	Description
194-5246	Spider Gear Plate Assembly



196-1231 Puller Group

SMCS Code: 3258-011
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Made as ordered (MAO)
- Used to remove 183-9511 Spider Gear and 156-4594 Spider Bearing Assembly
- Used with 1P-0820 Puller Group
- Reduces chance of chipping gear teeth during removal
- Designed for easy use with assembly equipment
- Requires two 8B-7549 Push Puller Legs and four 3H-0465 Plates

(Continued)

196-1231 Puller Group (Continued)

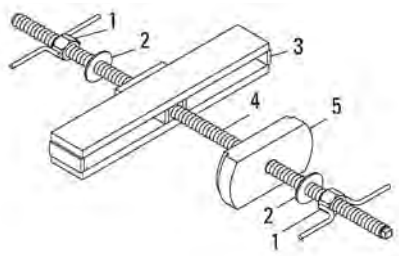
SMCS Code: 3258-011
Model: 797 Off-Highway Trucks
Warranty: Six Months

Item	Part Number	Description
1	191-8306	Gear Puller
2	191-8307	Rod
3	6B-6683	Nut
4	4B-4281	Washer
5	8B-7549	Leg - Push Puller 16.5 in
6	3H-0465	Puller Plate
7	1P-0820	Puller Group - Hyd
Not Shown	191-8308	Cap
--	196-1231	Puller Group

196-1218 Bearing Puller Group

Essential Tool

SMCS Code: 3258-011
Model: 797 Off-Highway Trucks
Warranty: Six Months



- Used to remove 6V-0460 Pinion Toe Bearing Cup
- Used with FT2747 Sleeve, discontinued 6V-0014 or 316-1491 Cylinder, and 2P-5550 Pump
- Reduces risk of cracking differential housing during cone removal -- cost of tooling is greatly offset by potential damage of housing

Reference

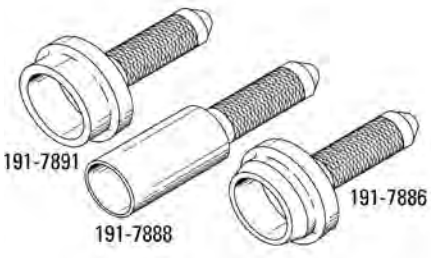
SENR2036, Service Manual, Power Train Disassembly and Assembly

Item	Part Number	Description	Qty.
1	9U-6809	Nut - Fast Runner, (M36 x 4)	2
2	3S-6162	Hard Washer	2
3	150-1784	Cross Block	--
4	9U-7998	Puller Stud, M36 x 920 mm (36.22 in) long	--
5	195-6446	Puller Plate	--
--	196-1218	Bearing Puller Group	--

Bearing Drivers

Essential Tool

SMCS Code: 3258-017
Model: 797 Off-Highway Trucks
Warranty: Six Months



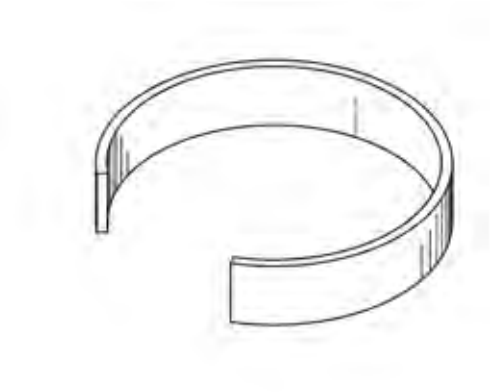
- Used to install 156-4594 Spider Gear Bearing Assembly
- Reduces risk of bearing and gear damage during installation
- Used with 1U-7461 Press and 194-5246 Guide Plate

Part Number	Description
191-7891	Bearing Driver, Toe Bearing Cup
191-7888	Bearing Driver, Toe and Heel Bearing Cones
191-7886	Bearing Driver, Heel Bearing Cup

FT2747 Receiver Sleeve
Essential Tool

SMCS Code: 3258-011
Model: 797 Off-Highway Trucks
Warranty: None

- Used to remove 6V-0460 Bearing Cup
- Used with 195-6446 Bearing Puller
- Reduces potential for damage to differential carrier casting
- Material: schedule 40 steel pipe



194-4791 Spiral Bevel Gear Handler
Essential Tool

SMCS Code: 3258-010
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Used to lift spiral bevel gear and spiral bevel pinion
- Provides proper balance during installation and removal procedure
- Designed for easy use with assembly equipment
- Reduces chance of chipping or damaging gear teeth

Reference

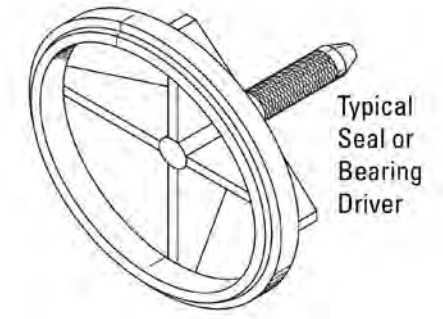
RENR2036, Service Manual, Power Train Disassembly and Assembly

Used on	188-0649[1] Spiral Bevel Gear
Overall size	660 x 1020 x 1400 mm (26.0 x 40.0 x 55.0 in)
Weight	310 kg (140 lb)
[1] Discontinued	

Part Number	Description
194-4791	Spiral Bevel Gear Handler

Seal and Bearing Drivers
Essential Tool

SMCS Code: 3258-017
Model: 797 Off-Highway Trucks
Warranty: Six Months



- Used to install seals and bearings in differentials
- Heat-treated for added durability
- Complete set (all parts shown below) available under 186-0361 Driver Group

Part Number	Description	Use
186-0339	Seal Driver	151-8641 Lip-type Seal
186-0352	Cup Driver	147-9506 Roller Bearing Cup [1]
190-6106	Guide - Seal Alignment	151-8641 Seal
194-8664	Sleeve Driver	151-8642 Wear Sleeve
195-0953	Cone Driver	147-9505 Cone Bearing

[1] 147-9506 has been discontinued

190-6107 Reamer

SMCS Code: 3250-012
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Used during installation of new differential gear and pinion
- Installation of new differential gear or pinion requires line reaming ground body bolt holes through case flange to ensure alignment and proper ground body bolt installation

Cutting diameter	20.269 mm (0.798 in)
Overall length	241.3 mm (9.5 in)
Flute length	63.5 mm (2.5 in)
Shank diameter	15.862 mm (0.6245 in)
Shank type	straight

Part Number	Description
190-6107	Reamer

194-1634 Ball Driver Assembly
Essential Tool

SMCS Code: 3258-017
Model: 797 Off-Highway Trucks
Warranty: Six Months

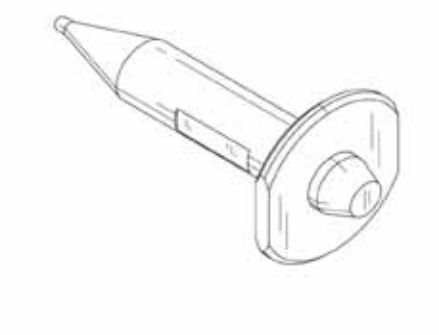
- Used to install 4B-9784, 9W-7226, and 6Y-3083 Ball Plugs to proper depth
- Strike tapered end with hammer to seat ball plugs
- Designed with hand protection shield to prevent injury
- Made of hardened-steel for longer life

Part Number	Description
194-1634	Driver Assembly

297-2795 Staking Punch Assembly
Essential Tool

SMCS Code: 3258-025
Model: 797 Off-Highway Trucks (serial number 5YW1-up), 797B Off-Highway Trucks (serial number JSM1-up)
Warranty: Six Months

- Used to stake differential spider gears to shaft
- Urethane guard prevents possible hand injury during staking process
- Hardened for added durability



References

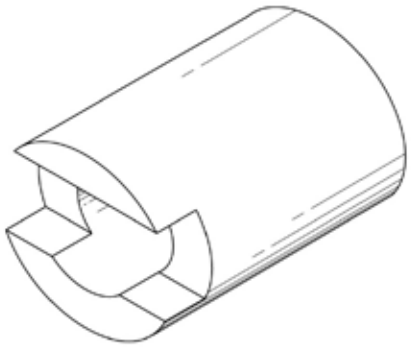
RENR2036, Disassembly and Assembly, 797 Off-Highway Truck Power Train, Differential and Bevel Gear Assembly
RENR2577, Disassembly and Assembly, 797 Off-Highway Truck Power Train, Differential and Bevel Gear Assembly
SEPD0856, Service Magazine (September 25, 2006), An Update to the Spider Assembly Improves the Retention of the Stake Nut in the Differential Assembly

Part Number	Description
297-2795	Staking Punch Assembly

FT3133 Receiver Sleeve
Essential Tool

SMCS Code: 3258
Model: 797F Off-Highway Truck
Warranty: Six Months

- Used to remove spider gear pins from 272-3338 Differential and Gear Group
- Used with 316-1496 Cylinder (20 ton capacity), 9U-5343 Threaded Rod [M24 x 3, 63.5 cm (25.0 in) long], 9U-5345 Nut (M24 x 3), and a suitable hydraulic power supply
- Threaded rod, nut, and cylinder pull spider gear pin into receiver sleeve
- Differential must be removed from axle housing
- Make from SAE 1020M steel (pipe)
- Offset machined notch locates end of sleeve over pin in differential



Outside diameter	114.3 mm (4.50 in)
Inside diameter	31.75 mm (1.250 in)
Length	152.4 mm (6.00 in)
Material	SAE 1020M Steel

Bevel Pinion Gear Tools
Essential Tool

SMCS Code: 3258-025
Model: 797 Off-Highway Trucks
Warranty: Six Months

Model: 797 Off-Highway Trucks
SMCS Code: 3258-025

- Made as ordered (MAO)

Reference

RENR2036, Service Manual, Powertrain Disassembly and Assembly for 797 Off-Highway Trucks

195-6445 Master Gauge

- Used to set zero position of dial indicator used in 194-4524

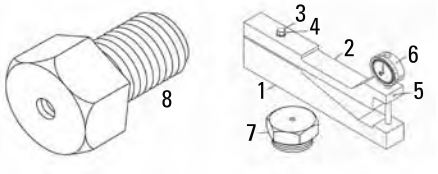
178-0344 Master Bearing Gauge

- Used to determine correct shim thickness when adjusting tooth contact pattern of bevel pinion gear
- Used with 194-4524 Position Gauge or 195-3179 Pinion Gauge Fixture
- Bearing has precision ground, slip-fit inside diameter to easily remove bearing cone when determining shim thickness
- Greatly reduces risk of bearing cone and mating component damage during setting procedure

NOTICE:
Do not leave this master gauge (bearing cone) assembled in thepinion. It will cause bearing failure and possible differential component failure.

Part Number	Description
178-0344	Master Bearing Gauge

FT2791 Adapter Bolt



FT2791 Adapter Bolt

- For serial numbers JSM130-up
- Used to help mechanic in shim measurement procedure
- Adapts 141-3146 Pinion Hub to accept a threaded bolt which holds 194-4524 Gauge

Item	Part No.	Description
7	187-2730	Adapter (not part of group), serial numbers 5YW1-up, JSM1-129
8	FT-2791	Adapter Bolt (not part of group), serial numbers JSM130-up

Item	Part Number	Description
1	195-6445	Master Gauge
2	194-4524	Position Gauge
3	1D-4540	Bolt
4	8T-4224	Washer
5	4B-3569	Setscrew
6[1]	7H-1942	Indicator

[1] Part of 8T-5096

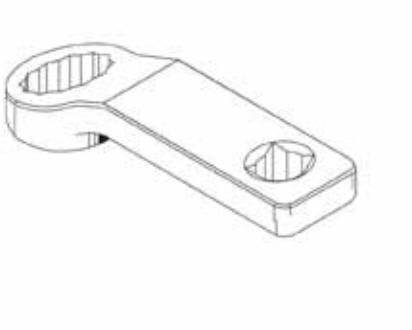
201-1144 Pinion Wrench
Essential Tool

SMCS Code: 3258-079
Model: 797 Off-Highway Trucks
Warranty: Six Months

Part Number	Description
201-1144	Pinion Wrench

- Used to tighten nut on bolted joint of bevel pinion
- Used with 9U-5007 Torque Wrench or equivalent
- Use when tapered bearing is installed on pinion shaft
- Heat-treated for added strength and durability

Hex	30 mm, double hex
Square drive	3/4 in
Center to center distance of square drive to socket	10.2 cm (4.0 in)



190-6106 Seal Alignment Guide
Essential Tool

SMCS Code: 3258-017
Model: 797 Off-Highway Trucks
Warranty: Six Months

Part Number	Description
190-6106	Guide - Seal Alignment

- Used to install 151-8641 Seal
- Helps prevent damage while installing differential spiral bevel pinion shaft seal
- Heat-treated for added durability and long tool life

195-3175 Front Wheel Bearing Handler
Essential Tool

SMCS Code: 3258-010
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Used to lift front wheel bearing and differential bearing
- Provides proper balance during installation and removal
- Designed for easy use with bearing heating equipment
- Reduces possibility of damaging bearings

Reference

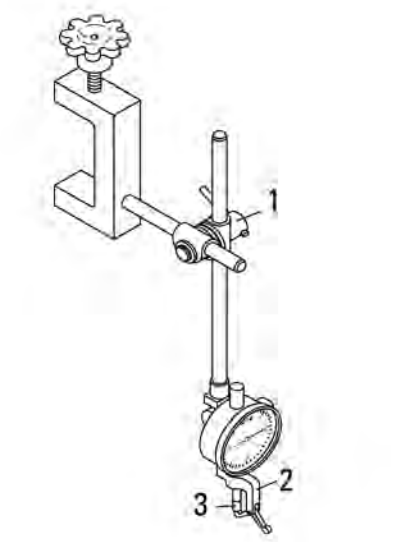
RENR2036, Service Manual, Power Train Disassembly and Assembly

Use	171-4745 Front Wheel Bearing
Overall size	550 x 680 x 750 mm (22 x 27 x 30 in)
Weight	90 kg (42 lb)

Part Number	Description
195-3175	Front Wheel Bearing Handler

194-6226 Gauge Group
Essential Tool

SMCS Code: 4050-010, 4080, 4205, and 4208
Model: 797 Off-Highway Trucks
Warranty: Six Months

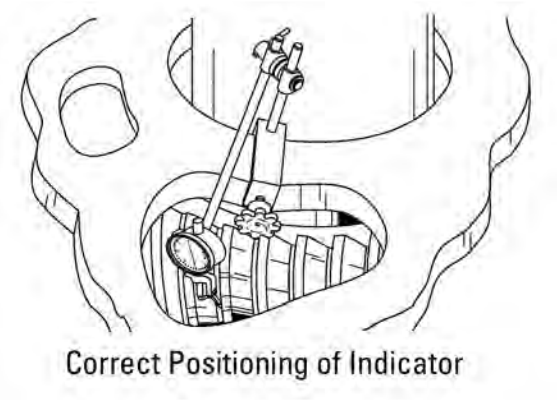


- Used to measure backlash on pinion bevel gear
- Used with 7H-1940 Universal Attachment (90 degrees) and 3S-3268 Tip
- Clamps onto differential casting to provide a stable mount
- Provides more reliable readings over using an indicator with a magnetic base
- Allows better positioning of indicator tip (indicator tip should be perpendicular to tooth face at heel of gear)

Item	Part Number	Description
1	194-6226	Gauge Group
2	7H-1940	Universal Attachment
3	3S-3268	Point - Indicator Contact
Service Part		
--	7H-1942	Indicator

Reference for 194-6226 Gauge Group

RENR2036, Service Manual, Power Train Disassembly and Assembly



Correct Positioning of Indicator

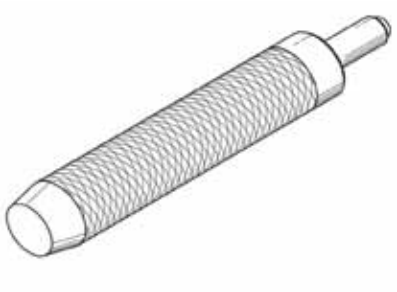
194-8665 Plug Driver

Essential Tool

SMCS Code: 4050-010, 4080, 4205, and 4208
Model: 797 Off-Highway Trucks
Warranty: Six Months

Part Number	Description
194-8665	Plug Driver

- Made as ordered (MAO)
- Used to install 160-5582 Orifice Plug into 160-6288 Housing
- Installs orifice plugs quickly and to proper depth (eliminates measuring and guess work)
- Helps prevent installation damage that could occur using conventional hand tools
- Heat-treated for added durability
- Knurled handle prevents slipping
- Overall length: 158.0 mm (6.2 in)

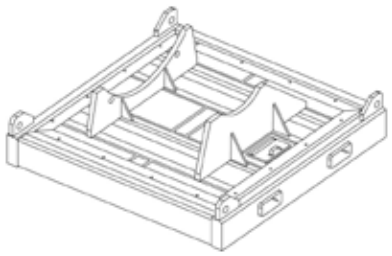


202-2054 Shipping Stand Group (Differential Bevel Gear)

SMCS Code: 4208-052
Model: 797 Off-Highway Trucks
Warranty: Six Months

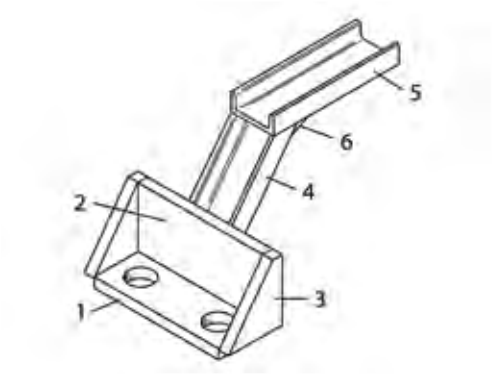
Part Number	Description
202-2054	Shipping Stand Group

- Made as ordered (MAO)
- Used to hold differential bevel gear after removal



FT2745 Reaction Bar
Essential Tool

SMCS Code: 3258-025
Model: 797 Off-Highway Trucks
Warranty: None

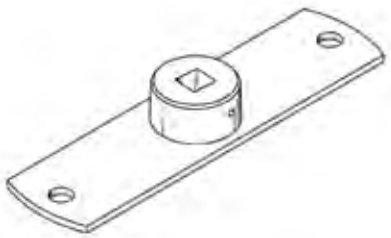


- Used as a torque stop when rotating pinion with a pneumatic wrench
- Used with 195-0956 Torque Adapter
- Used during bearing setting and contact pattern evaluation
- Eliminates mechanic fatigue from manually rotating pinion

Item	Description	Material
1	Mounting plate	SAE1020
2	Back plate	SAE1020
3	Side plate	SAE1020
4	Angle channel	SAE1026
5	Top channel	SAE1026
6	Gusset plate	SAE1020

195-0956 Torque Adapter
Essential Tool

SMCS Code: 3258-025
Model: 797 Off-Highway Trucks
Warranty: Six Months

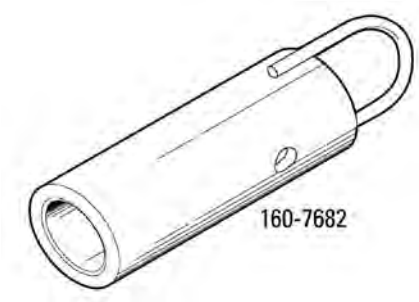


- Used to rotate spiral bevel gear pinion during adjustment procedure
- Bolts onto pinion using two 8T-0293 Bolts (M12 x 1.75) and two 5P-8245 Washers
- Bolt spacing: 218 mm (8.6 in)
- Square drive: 1 in

Part Number	Description
195-0956	Torque Adapter

Axle Adapters
Essential Tool

SMCS Code: 3250-010, 3253-010, 3259-010, 3282-010
Model: 797 Off-Highway Trucks
Warranty: Six Months



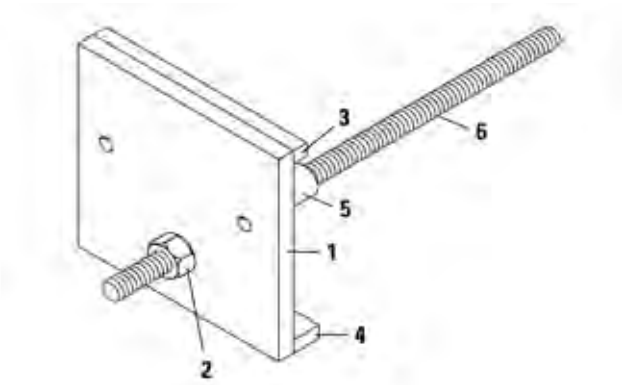
Model: 797 Off-Highway Trucks
SMCS Code: 3250-010, 3253-010, 3259-010, 3282-010

- Used to remove and install rear drive axles
- Heavy-duty, design protects axle threads
- 160-7682 Axle Adapter used for axles 145-8008 and 145-8009 (Serial Number 5YW1-233)
- 188-4534 Axle Adapter used for axles 185-8902 and 185-8903 (Serial Numbers 5YW234-up and JSM1-up)

FT2764 Gear Retainer Assembly

SMCS Code: 4056-011
Model: 797 Off-Highway Trucks
Warranty: None

- Used to hold final drive planet carrier in position inside rear axle housing
- Retains carrier position when axle is removed; makes reinstallation much easier because parts remain in alignment
- Prevents carrier from lowering out of position when sun gear is removed; can save several hours of sun gear reinstallation time

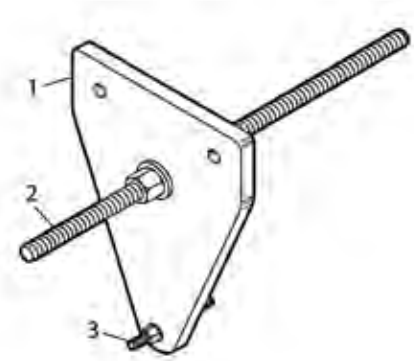


Item	Part No.	Description	Material
1		Plate	SAE1018 steel
2	2J-3507	Nut	
3		Plate	SAE1018 steel
4		Plate	SAE1018 steel
5		Tube	DOM
6		Threaded Rod	SAE1018 steel

FT2676 Sun Gear Retainer

SMCS Code: 4056-011
Model: 797 Off-Highway Trucks
Warranty: None

- Used to help remove axle without removing final drive
- Prevents sun gear movement and retains final drive components in their correct position
- Each threaded rod is held in position with one nut and one washer
- Plate material: SAE1026 steel



Item	Part No.	Description	Thread
1		Plate	
2		Threaded Rod (98790A0381)[1]	1/2 - 3
	2J-3507	Nut	
	5P-8250	Washer	
3		Threaded Rod (98790A0331)[1]	1 - 8
	1F-7958	Nut	
	5P-8245	Nut Washer	
[1] McMaster-Carr part number			

201-1112 Bearing Driver
Essential Tool

SMCS Code: 4055-010
Model: 797 Off-Highway Trucks
Warranty: Six Months

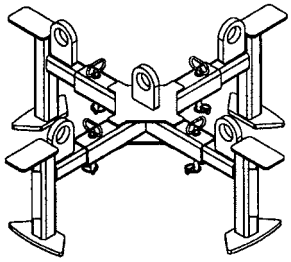
- Used to install 174-3045 First Reduction Bearing Cup in 139-7638 Planet Gear
- Used with 1U-7459 or 1U-7461 Economy Shop Press, 55 Ton
- Reduces chance of damage to bearing cup and planet gear
- Precision machined and heat treated for long durability
- 201-1116 Driver used to remove 174-3045 Bearing Cup

Reference
RENR2036, Service Manual, Powertrain Disassembly and Assembly

Part Number	Description
201-1112	Bearing Driver

199-8230 Ring Gear Lifting Bracket
Essential Tool

SMCS Code: 4055-010
Model: 797 Off-Highway Trucks
Warranty: Six Months



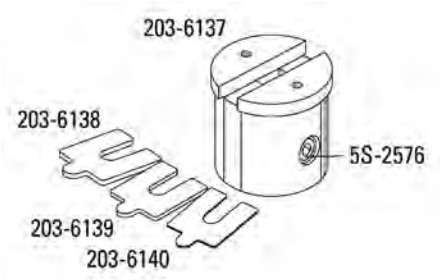
- Used to remove and install final drive ring gears
- Removes inner and outer ring gears as one single unit
- Rear wheel station must be in vertical position to use this tool
- Overall size: 865 x 865 x 470 mm (34.0 x 34.0 x 18.0 in)

Reference
RENR2036, Service Manual, Powertrain Disassembly and Assembly

Part Number	Description
199-8230	Ring Gear Lifting Bracket

201-1116 Press Driver Group
Essential Tool

SMCS Code: 4055-010
Model: 797 Off-Highway Trucks
Warranty: Six Months



- Made as ordered (MAO)
- Used to remove 174-3045 Bearing Cup (first reduction) from 139-7638 Planet Gear
- Used with 1U-7459 or 1U-7461 Economy Shop Press, 55 Ton
- Reduces chance of damage to bearing cup and planet gear
- 3 shims provided to expand diameter of driver (allows tool to work in worn or damaged bearing cups)
- Precision machined and hardened for long durability

Reference
RENR2036, Service Manual, Disassembly and Assembly

(Continued)

201-1116 Press Driver Group (Continued)

Essential Tool

SMCS Code: 4055-010
Model: 797 Off-Highway Trucks
Warranty: Six Months

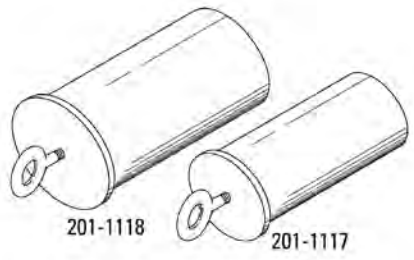
Part Number	Description
201-1116	Press Driver Group
203-6137	Driver
203-6138	Shim, 2.50 mm (0.098 in) thick
203-6139	Shim, 1.27 mm (0.050 in) thick
203-6140	Shim, 2.5 mm (0.005 in) thick
5S-2576	Socket Head Bolt, 3/4 -10

Gear Retainer Assemblies

Essential Tool

SMCS Code: 4055-002
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Used to assemble final drive planet gears into planetary group
- 201-1117 used with 139-7638 1st Reduction Gear in 179-7284 Planetary Group
- 201-1118 used with 139-7651 2nd Reduction Gear in 179-7285 Planetary Group
- Retains “planet gear to housing” alignment while positioning carrier in a hydraulic press
- Made from nylon material to prevent potential damage to planetary housing, gears, and/or bearings
- Includes 1P-7407 Eyebolt



Application Procedure

1. Place gear in planetary
2. Install nylon pin
3. Place planetary in hydraulic press
4. Remove nylon pin
5. Press steel pin into place

Reference

RENR2036, Service Manual, Disassembly and Assembly

Part Number	Description
201-1117	Gear Retainer Assembly
201-1118	Gear Retainer Assembly

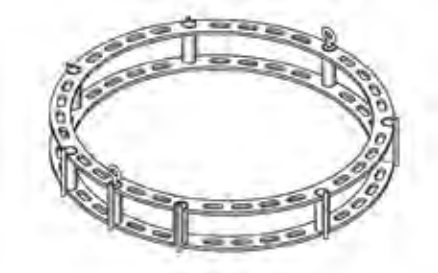
160-5492 Alignment Tool

Essential Tool

SMCS Code: 4255-024
Model: 797 Off-Highway Trucks
Warranty: Six Months

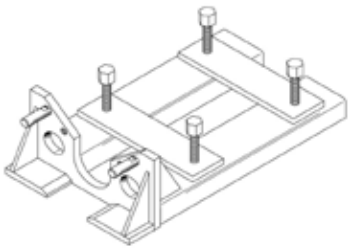
Part Number	Description
160-5492	Alignment Tool

- Used to align splines on brake disc
- Allows for smooth, easy brake package installation on wheel stations



196-6960 Handler Assembly
Essential Tool

SMCS Code: 7201-010
Model: 797 Off-Highway Trucks
Warranty: Six Months



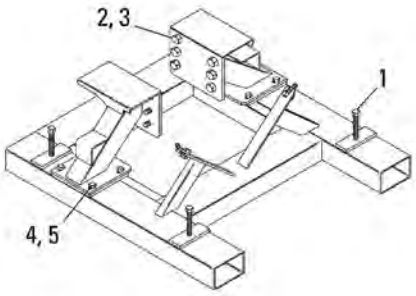
- Made as ordered (MAO)
- Used to quickly remove and install 147-5519 Front Strut Plate
- Used with fork lift and 174-9245 Front Strut Handling Group
- Works with 190-3694 Shim Gauge
- Provides full access to shim area and bolt positions
- Easier installation -- lift tube jack screws allow plate position adjustment
- Lift tube dimensions (W x H): 305 x 203 mm (12.0 x 8.0 in)

Reference
RENR2037, Service Manual, Disassembly and Assembly

Part Number	Description
196-6960	Handler Assembly

174-9245 Front Strut Handling Group
Essential Tool

SMCS Code: 7201-010
Model: 797 Off-Highway Trucks
Warranty: Six Months



- Made as ordered (MAO)
- Used to safely remove and install front strut
- Equipped with lift tube jack screws to tilt strut 3 degrees in either direction (makes installation onto truck easier)
- Fully adjustable strut post (can be attached on or off handler support frame)
- Designed with fork lift tubes for easier movement of strut

Reference
RENR2037, Service Manual

Working load limit	8000 kg (17637 lb)

Item	Part Number	Description
1	196-8520	Forcing Bolt Assembly (M30 x 3.5, 16.5 cm [6.50 in] long)
2	160-6513	Hex Head Bolt (M36 x 4, 80 mm [3.15 in] long)
3	9X-8259	Hard Washer (M36)
4	6V-9199	Hex Head Bolt (M24 x 3, 50 mm [1.97 in] long)
5	6V-8237	Hard Washer (M24)
--	174-9245	Front Strut Handling Group

196-8520 Forcing Bolt Assembly (M30)

Essential Tool

SMCS Code: 7201-024
Model: 797 Off-Highway Trucks
Warranty: Six Months

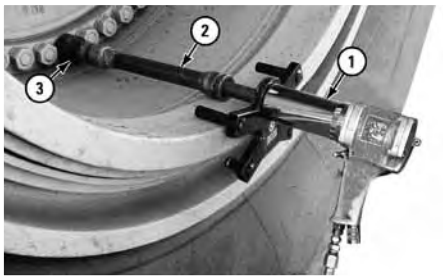
- Used to tilt front strut in either direction to make installation easier
- Used with 174-9245 Front Strut Handling Group and 196-6960 Handler Assembly
- Can be ordered separately to replace damaged parts
- Thread size: M30 x 3.5
- Overall length: 165.0 mm (6.50 in)

Part Number	Description
196-8520	Forcing Bolt Assembly (M30 x 3.5, 16.5 cm [6.50 in] long)

194-7592 Pneumatic Wrench Group

SMCS Code: 4210-010
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Made as ordered (MAO)
- Used to remove and install wheel nuts
- Tightens nuts to maximum torque of 4125 N•m (3000 ft-lb)
- Output torque is set by adjusting air supply pressure on regulator (part of cage assembly)
- Group includes a cage assembly with built-in air filter, regulator, and automatic air line oiler
- Requires 4C-8856 Fitting and 8T-9568 Oil (not included)



Repair Information

Global Bolting Technologies, Inc.
827 Anchor Avenue
Billings, MT 59105-2519
Phone and fax: (406) 259-9111
E-mail: torctim@imt.net

194-7609 Hose Assembly	
Inside diameter	1/2 in
Length	3.7 m (12.9 ft)
Hose ends	1/2 NPT (1 end) and quick disconnect (opposite end)
194-7610 Cage Assembly	
Overall size	33.7 x 38.7 cm (13.3 x 15.3 in)
194-7612 Pressure Gauge	
Pressure rating	0 - 689 kPa (0 - 100 PSI)
Type	Liquid-filled
Stem size	1/4 NPT

Item	Part Number	Description
--	194-7592	Pneumatic Wrench Group
2	194-7593	Extended Drive, 41 in Rims
2	212-9332	Extended Drive, 44 in Rims

(Continued)

194-7592 Pneumatic Wrench Group (Continued)

SMCS Code: 4210-010
Model: 797 Off-Highway Trucks
Warranty: Six Months

Item	Part Number	Description
3	194-7596	Deep Socket, 1 in square drive
Item 1: Wrench Group, Pneumatic and Pneumatic Wrench Assembly		
1	194-7594	Special Reaction Arm
1	194-7608	Snap Ring Kit
Not shown		
--	194-7591	Regulator Group (includes the following)
--	194-7609	Hose Assembly
--	194-7610	Cage Assembly
--	194-7611	Filter Assembly
--	194-7612	Pressure Gauge

212-9332 Drive Extended

Essential Tool

SMCS Code: 4210-010
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Used to remove and install wheel nuts on 44 inch wide rims
- Used with discontinued 195-3501 Pneumatic Wrench, 194-7594 Special Reaction Arm, and 194-7596 Deep Socket
- Square drive: 1 inch

Reference

RENR2036, 797 Off-Highway Truck Power Train, Disassembly and Assembly Manual

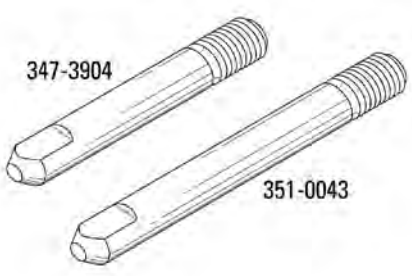
NOTICE:
Drive extension must be used with 194-7596 Deep Socket. Using a standard socket will not allow drive extension splines to fully engage into wrench, resulting in tool damage.

Part Number	Description
212-9332	Extended Drive, 44 in Rims

Pilot Pins

Essential Tool

SMCS Code: 3258-012
Model: 793C, 793D, and 797B Off-Highway Truck
Warranty: Six Months



- Used to aid in installation of differential and bevel gear assemblies in axle housing
- Pilot pins thread into housing to precisely align components during assembly (used in pairs)
- Helps prevent premature wear due to misalignment
- Black oxide coated for corrosion resistance and heat treated for added durability and strength

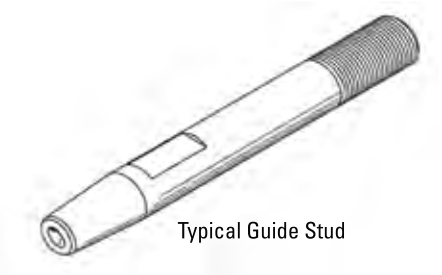
Part Number	Description	Overall Length	Pin Diameter	Threaded End
347-3904	Pilot Pin	205 mm (8.07 in)	32 mm (1.26 in)	M30
351-0043	Pilot Pin	270 mm (10.63 in)	32 mm (1.26 in)	M30

Guide Studs

Essential Tool

SMCS Code: 3258-024
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Used to align and hold component in proper orientation during installation and removal
- Greatly reduces risk of damage to component being installed and other mating components
- Made of hardened steel for added durability
- Guide stud has wrench flats for easier installation and removal
- Black oxide-coated for corrosion resistance


Typical Guide Stud

Guide Stud	Thread Size	Thread Length	Overall Length	Use
195-0954	M24 x 3.0	71-4 mm	16.5 cm (6.5 in)	Align spiral bevel pinion heel bearing cage to differential housing (2 required)
174-8986	M30 x 3.5	55 mm	22.0 cm (3.9 in)	Align transmission to differential housing (2 required)
175-6853	M36 x 3.5	65 mm	28.5 cm (11.2 in)	Align rear wheel station to differential housing (2 required)

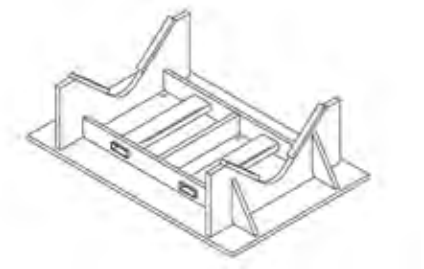
176-9274 Center Support Assembly

SMCS Code: 0630-017, 0635
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Made as ordered (MAO)
- Used to provide safe, secure support for center frame section
- Keeps rear wheels off the ground for servicing wheel stations or differential/axle

Reference

Service Tool and Service Publications



Lift height	152 mm (6.0 in)
Maximum capacity	136,078 kg (300,000 lb)

Part Number	Description
176-9274	Center Support Assembly

201-7602 Adapter Handler Group

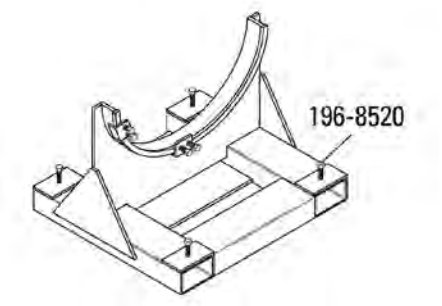
Essential Tool

SMCS Code: 4199-010
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Made as ordered (MAO)
- Used to remove and install 191-5196 Split Ring Adapters
- Handles both adapters at same time
- Split can be oriented in any rotary position
- Adapters are mechanically attached to handler group

Reference

RENR2036, Service Manual, Disassembly and Assembly



Fork pockets	203.2 x 304.8 mm (8.0 x 12.0 in)
Center-to-center spacing on fork pockets	1117.6 mm (44.0 in)
Replacement bolt assembly	196-8520

(Continued)

201-7602 Adapter Handler Group (Continued)

Essential Tool

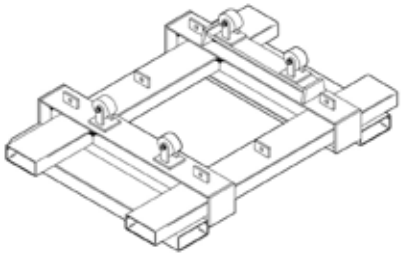
SMCS Code: 4199-010
Model: 797 Off-Highway Trucks
Warranty: Six Months

Part Number	Description
201-7602	Adapter Handler Group

173-6624 Wheel Carrier Bracket Assembly

Essential Tool

SMCS Code: 4208-052
Model: 797 Off-Highway Trucks
Warranty: Six Months



European Union compliant, CE marked

- Used to secure rear wheel station during removal and installation
- Designed with front and side forklift transport tubes
- Roller bearing wheels allow rotation for aligning bolt holes
- Equipped with welded-on eye plates (76.2 mm [3 in] hole) for 3 tie down locations
- May use 1U-9723 Ratchet-Type Binder

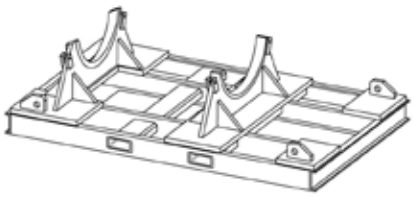
Reference

RENR2037, Service Manual

Part Number	Description
173-6624	Wheel Carrier Bracket Assembly

202-2053 Shipping Stand Group (Wheel Station)

SMCS Code: 4208-052
Model: 797 Off-Highway Truck
Warranty: Six Months



- Made as ordered (MAO)
- Used to hold rear wheel stations after removal

Part Number	Description
202-2053	Shipping Stand Group (Wheel Station)

210-4885 Bearing Cup Driver Group
Essential Tool

SMCS Code: 4208-016
Model: 797 Off-Highway Truck
Warranty: Six Months

Part Number	Description
210-4885	Bearing Cup Driver Group

- Used to realign 170-0497 Bearing Cup into 139-7619 Rear Wheel during installation procedure
- Works with rear wheel in a vertical position
- Made from durable steel, heat treated for added durability

Reference
RENR2036, 797 Off-Highway Truck Powertrain, Disassembly and Assembly

203-7705 Press Plate
Essential Tool

SMCS Code: 7551-012
Model: 797 Off-Highway Trucks
Warranty: Six Months

Part Number	Description
203-7705	Press Plate

- Used to install 147-8089 Bearing into 139-7631 Retainer and 139-7630 Guide
- Used with 1U-7459 and 1U-7461 55 Ton Economy Shop Press
- Reduces chance of damage to bearing cup and planet gear
- Precision machined and heat-treated

Reference
RENR2036, Service Manual, Disassembly and Assembly

149-0974 Seal Installer Assembly
Essential Tool

SMCS Code: 4006-012
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Used to install 144-5308 Duo-Cone Seal Group
- Required for proper installation of seal
- Makes installation faster and easier
- Eliminates rolling and twisting of toric ring
- Handhold slots for ease of handling and positioning

Reference
SEHS8364, Special Instruction, Assembly and Installation of Conventional Duo-Cone Seals

Seal diameter	939.8 mm (37.0 in)
Seal ramp angle	15 degrees
Installer OD	975.1 mm (38.39 in)
Installer width	140.0 mm (5.51 in)

(Continued)

149-0974 Seal Installer Assembly (Continued)

Essential Tool

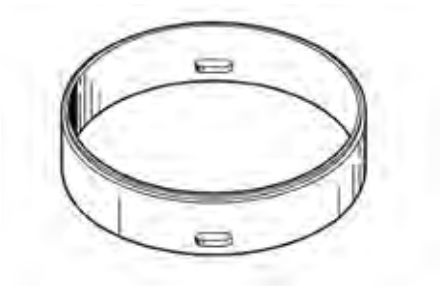
SMCS Code: 4006-012
Model: 797 Off-Highway Trucks
Warranty: Six Months

Part Number	Description
149-0974	Seal Installer Assembly

158-6541 Installer Extension Ring

Essential Tool

SMCS Code: 7561-012
Model: 797 Off-Highway Trucks
Warranty: Six Months



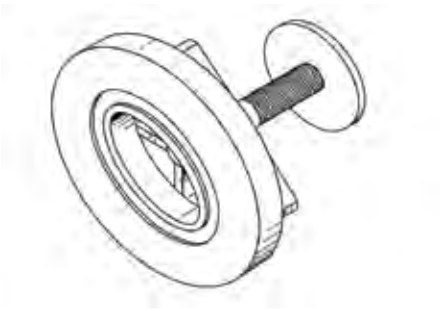
- Used to install 68.6 cm (27 in) Duo Cone seals
- Used with 4C-6582 Installer
- Provides extra length for deeper housings
- Makes installation faster and much easier
- Hand-hold slots for easy handling and positioning
- Outside diameter: 701.4 mm (27.61 in)
- Installer width: 170.0 mm (6.69 in)

Part Number	Description
158-6541	Installer Extension Ring

Pin Installation Tools for Rear Axle Linkage Pin and Rear Suspension Cylinder

Essential Tool

SMCS Code: 7555-016, 7200-525
Model: 797 Off-Highway Trucks
Warranty: Six Months



- Used to install pin and seal in rear axle linkage and rear suspension cylinder

Reference

- RENR2037, Service Manual

Seal Drivers

- Reduces risk of damage during seal installation
- Pilots on seals inside diameter
- Eliminates need for freezing seal prior to assembly
- Heat-treated for added durability

Part Number	Description	Use
196-7858	Seal Driver	Install discontinued 157-2386 Seal (rear axle linkage pin seal)

Collet Gauges

- Requires one collet at each end of linkage pin (bolts directly onto linkage pin)
- Designed with three threaded pusher holes to push collet out of linkage pin bore, if necessary

Part Number	Description	Use
176-6544	Collet Gauge	Install 156-9804 Pin in rear axle linkage (centers pin end to end in linkage pin bore)
200-4279	Collet Gauge	Install 191-3628 Pin in rear suspension cylinder

176-6543 Modified Socket, 46 mm (1.81 in)

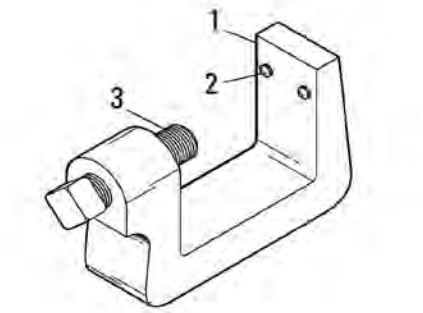
Part Number	Description
176-6543	Modified Socket, 46 mm (1.81 in)

- Used to remove pin bolts on rear axle linkage and rear suspension cylinder pin
- Used with 1 inch square drive ratchet or breaker bar
- Short length allows socket to be used in minimum clearance applications

176-6540 Pin Joint Clamp Assembly

- Used to tighten and loosen rear axle linkage pin bolts
- Provides torque reaction arm support for hydraulic wrench
- Clamps onto machine to provide solid support

Item	Part Number	Description
1	176-6540	Pin Joint Clamp Assembly
2	9X-6611	Setscrew
3	2H-3896	Setscrew



174-1397 Torque Converter Mule

SMCS Code: 3101-010
Model: 797 Off-Highway Trucks
Warranty: Six Months

Part Number	Description
174-1397	Torque Converter Mule

- Made as ordered (MAO)
- Used to hold a 797 torque converter during installation or removal
- Designed with a wide wheel base for stability
- Flotation tires for use in job site conditions

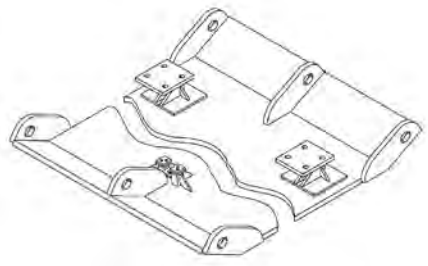
186-3390 Skid Group, Torque Converter Stand

SMCS Code: 3101-010
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Made as ordered (MAO)
- Used to remove and install torque converter without removing fuel tank
- Supports torque converter without risk of spline shaft damage

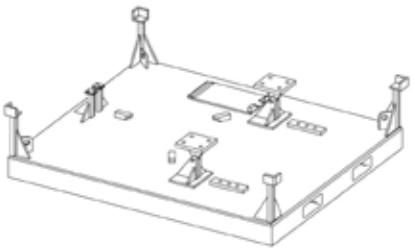
Reference
RENR2037, Service Manual

Part Number	Description
186-3390	Skid Group, Torque Converter Stand



202-2057 Shipping Stand Group (Converter)

SMCS Code: 4208-052
Model: 797 Off-Highway Trucks
Warranty: Six Months

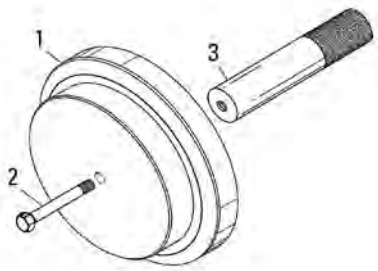


- Made as ordered (MAO)
- Used to hold converter after removal

Part Number	Description
202-2057	Shipping Stand Group (Converter)

198-4904 Bearing Driver Essential Tool

SMCS Code: 7551-012
Model: 797 Off-Highway Trucks
Warranty: Six Months



- Used to install 158-7827 and 158-7828 Sleeve Bearings in torque converters
- Used with 1P-0532 Handle (part of 1P-0520 Driver Group)
- Quickly installs bearing to proper depth
- Heat-treated for added durability and long tool life
- Black oxide coating provides long corrosion free life

Reference

SENR2036, Service Manual, Power Train Disassembly and Assembly

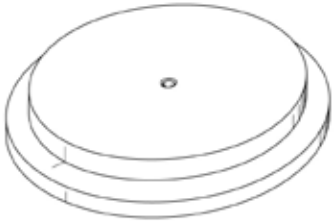
Bearing ID	149.24 mm (5.875 in)
Bearing OD	155.78 mm (6.133 in)
Bearing installation depth	1.0 mm (0.04 in)

Item	Part Number	Description
1	198-4904	Bearing Driver
2	1P-0532	Handle [1]
3	4L-7124	Bolt - Hex Socket Head [1]

[1] Part of 1P-0520 Driver Group

198-3488 Seal Driver Essential Tool

SMCS Code: 3280-014
Model: 797 Off-Highway Trucks
Warranty: Six Months



- Used to properly install 145-6048 Lip-type Seal in transmission and torque converter
- Used with 1P-0532 Handle

Reference

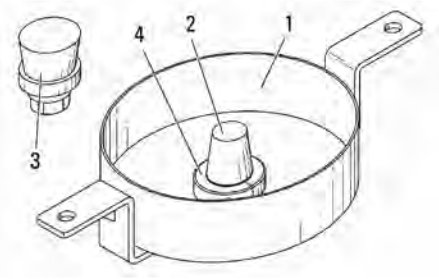
RENR2036, 797 Power Train Disassembly and Assembly

Part Number	Description
198-3488	Seal Driver

326-8026 Cover Assembly
Essential Tool

SMCS Code: 3030
Model: M-Series Motor Grader
Warranty: Six Months

- Used to hold drive shaft yoke in place during transmission test procedure
- Rubber bumper presses against yoke to prevent it from being dislodged and prevent oil leakage around yoke seal
- Ball bearing assembly allows bumper to rotate with yoke during testing
- Removable collar allows changing bumper assemblies to fit various transmission arrangements
- Attaches to transmission cover plate using existing bolt holes



References

RENR8454, 120M, 12M, 140M, and 160M Motor Grader Power Train
RENR8482, 14M and 16M Motor Grader Power Train

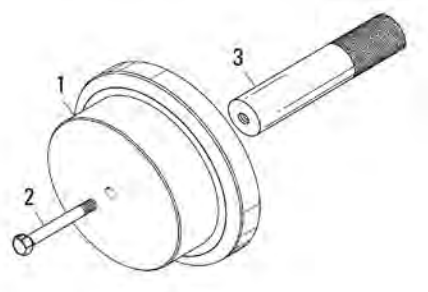
Item	Description
1	Plate Assembly
2	Bumper Assembly, 50.8 mm (2.00 in) long tapered bumper, Used with 253-8405 and 331-5225 Transmission Arrangement
3	Bumper Assembly, 25.4 mm (1.00 in) long tapered bumper, Used with 253-8407 Transmission Arrangement
4	Collar Assembly

Part Number	Description
326-8026	Cover Assembly

198-4386 Bearing Driver
Essential Tool

SMCS Code: 3030-012
Model: 797 Off-Highway Trucks
Warranty: Six Months

- Used to install transmission sleeve bearing
- Used with 1P-0532 Handle (part of 1P-0520 Driver Group)
- Quickly installs bearing to proper depth
- Heat-treated for added durability and long tool life



Reference

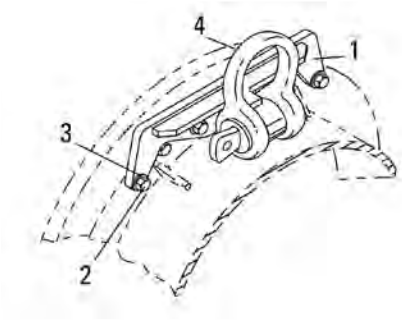
SENR2036, Service Manual, Power Train Disassembly and Assembly

Item	Part Number	Description
1	198-4386	Bearing Driver
2	1P-0532	Handle [1]
3	4L-7124	Bolt - Hex Socket Head [1]

[1] Part of 1P-0520 Driver Group

169-3687 Transmission Removal and Installation Bracket Assembly
Essential Tool

SMCS Code: 3030-010, 3400-010
Model: 797 Off-Highway Trucks
Warranty: Six Months



European Union compliant, CE marked

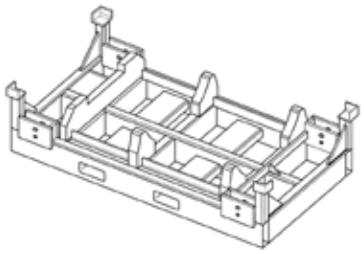
- Used to remove and install transmission with body attached
- Used with mobile cranes

Maximum capacity	6350 kg (14,000 lb)

Item	Part Number	Description
1	169-3687	Transmission Removal and Installation Bracket Assembly
2	8T-0283	Hex Head Bolt
3	9X-8258	Washer
--	193-5474	Shackle

202-2056 Transmission Shipping Stand Group

SMCS Code: 4208-052
Model: 797 Off-Highway Truck
Warranty: Six Months

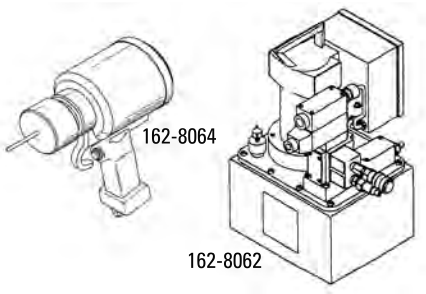


- Made as ordered (MAO)
- Used to hold transmission after removal

Part Number	Description
202-2056	Transmission Shipping Stand Group
Service/Repair Parts	
1U-9809	Binder Chain Assembly
1U-9724	Load Binder

162-8064 Fastener Installer
162-8062 Hydraulic Power Unit

SMCS Code: 0757-022
Model: 797 Off-Highway Trucks and All Other Off-Highway Trucks Requiring Bed Liner Fasteners
Warranty: Six Months



European Union compliant, CE marked

- Made as ordered (MAO)
- Used to provide positive retention of bed liners to off-highway truck beds
- Used with power hydraulic unit, nose assembly, hose kit, collars, and fasteners as a group to provide correct installation
- Makes one-person installation quick and easy
- Installation thickness:
  123-3493 Fastener: 25 mm (1.0 in
  123-3495 Fastener: 16 to 20 m (0.6 to 0.8 in)

(Continued)

162-8064 Fastener Installer (Continued)

162-8062 Hydraulic Power Unit

SMCS Code: 0757-022
Model: 797 Off-Highway Trucks and All Other Off-Highway Trucks Requiring Bed Liner Fasteners
Warranty: Six Months

Part Number	Description
162-8062	Hydraulic Power Unit
162-8064	Fastener Installer
Not shown	
123-3494	Collar
123-3493	Fastener
123-3495	Fastener

194-5182 Adapter

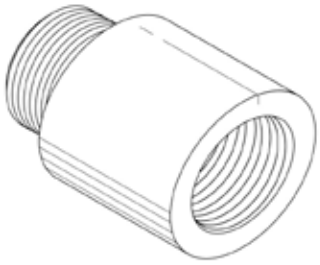
Essential Tool

SMCS Code: 2449, 2450, 2455, 2493, 4002, 4006, 4200, 4205, 4208, 4215, 4234, 7542, 7577
Model: 793, 793B, 793C and 797 Off-Highway Trucks
Warranty: Six Months

Part Number	Description
194-5182	Adapter

- Used to adapt 1 1/8-12 male O-ring thread to 1-11 1/2 NPTF thread
- Can be used for drain plugs or other conversion applications

References
NEHS0848, Tool Operating Manual for 204-7392 Transfer/Filter Cart
SEBF8483, Procedure for Kidney Looping Front Wheel Groups of 793, 793B, 793C and 797 Off-Highway Trucks



331-1645 Transmission Stand Assembly

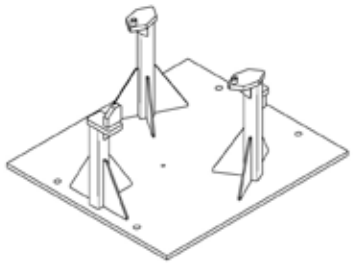
Essential Tool

SMCS Code: 3030
Model: 793F Mechanical Drive Off-Highway Truck
Warranty: Six Months

Part Number	Description
331-1645	Transmission Stand Assembly

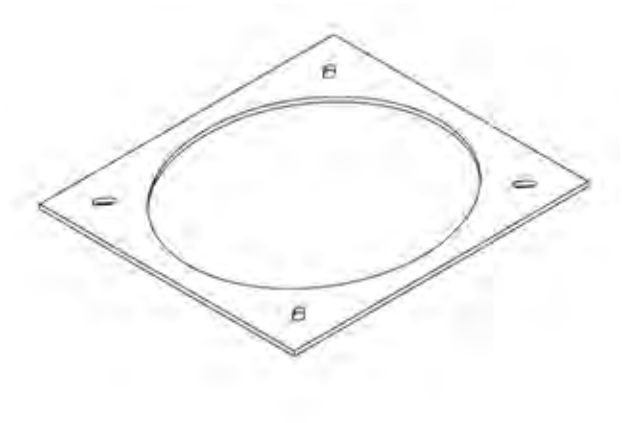
- Used to support transmission during disassembly and assembly
- Supports transmission at four points for added stability during servicing
- Welded steel construction
- Made as ordered (MAO)
- Weight: 191 kg (421 lbs)

Reference
KENR8579, 793F Off-Highway Truck, Disassembly and Assembly



FT3108 Support Ring
Essential Tool

SMCS Code: 3160
Model: 797F Off-Highway Truck
Warranty: None



- Used to support 296-5641 Planetary Group Housing
- Used with 1P-2420 Transmission Repair Stand, FT0996 Positioning Group, and FT0957 Adapter Group
- Prevents up-right arms from tipping outward during disassembly and assembly
- Material: SAE 1020M steel

Reference
KENR8372, Disassembly and Assembly Service Manual

369-3831 Seal Driver
Essential Tool

SMCS Code: 3280-014
Model: 795F AC Off-Highway Truck
Warranty: Six Months

- Used to properly and quickly install 300-7717 Lip Seal to proper depth
- Used with 1P-0532 Handle (part of 1P-0520 Driver Group)
- Small diameter of tool is used to remove old seal while large diameter is used to install new seal
- Heat-treated for added durability and long tool life
- Black oxide coating provides long corrosion-free life

Part Number	Description
369-3831	Seal Driver